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TO: Distribution List for the California Academy of Sciences Improvement Project

FROM: Barbara W. Sahm, Environmental Review Officer

SUBJECT: Request for the Final Environmental Impact Report for the California Academy of Sciences Improvement Project

This is the Draft of the Environmental Impact Report for the California Academy of Sciences Improvement Project. A public hearing will be held on the adequacy and accuracy of this document on October 22, 1987. After the public hearing, our office will prepare and publish a document titled "Summary of Comments and Responses" which will contain a summary of all relevant comments on this Draft EIR and our responses to those comments. It may also specify changes to this Draft EIR. Those who testify at the hearing on the Draft will automatically receive a copy of the Comments and Responses document along with notice of the date reserved for certification; others may receive such copies and notice on request or by visiting our office. This Draft EIR together with the Summary of Comments and Responses document will be considered by the City Planning Commission in an advertised public meeting and certified as a Final EIR.

After certification, we will modify the Draft EIR as specified by the Comments and Responses document and print both documents in a single publication called the Final Environmental Impact Report. The Final EIR will add no new information to the combination of the two documents except to reproduce the certification resolution. It will simply provide the information in one rather than two documents. Therefore, if you receive a copy of the Comments and Responses document in addition to this copy of the Draft EIR, you will technically have a copy of the Final EIR.

We are aware that many people who receive the Draft EIR and Summary of Comments and Responses have no interest in receiving virtually the same information after the EIR has been certified. To avoid expending money and paper needlessly, we would like to send copies of the Final EIR to private individuals only if they request them.

If you want a copy of the Final EIR, please so indicate in the space provided on the next page and mail the request to the Office of Environmental Review within two weeks after certification of the EIR. Any private party not requesting a Final EIR by that time will not be mailed a copy. Public agencies on the distribution list will automatically receive a copy of the Final EIR.

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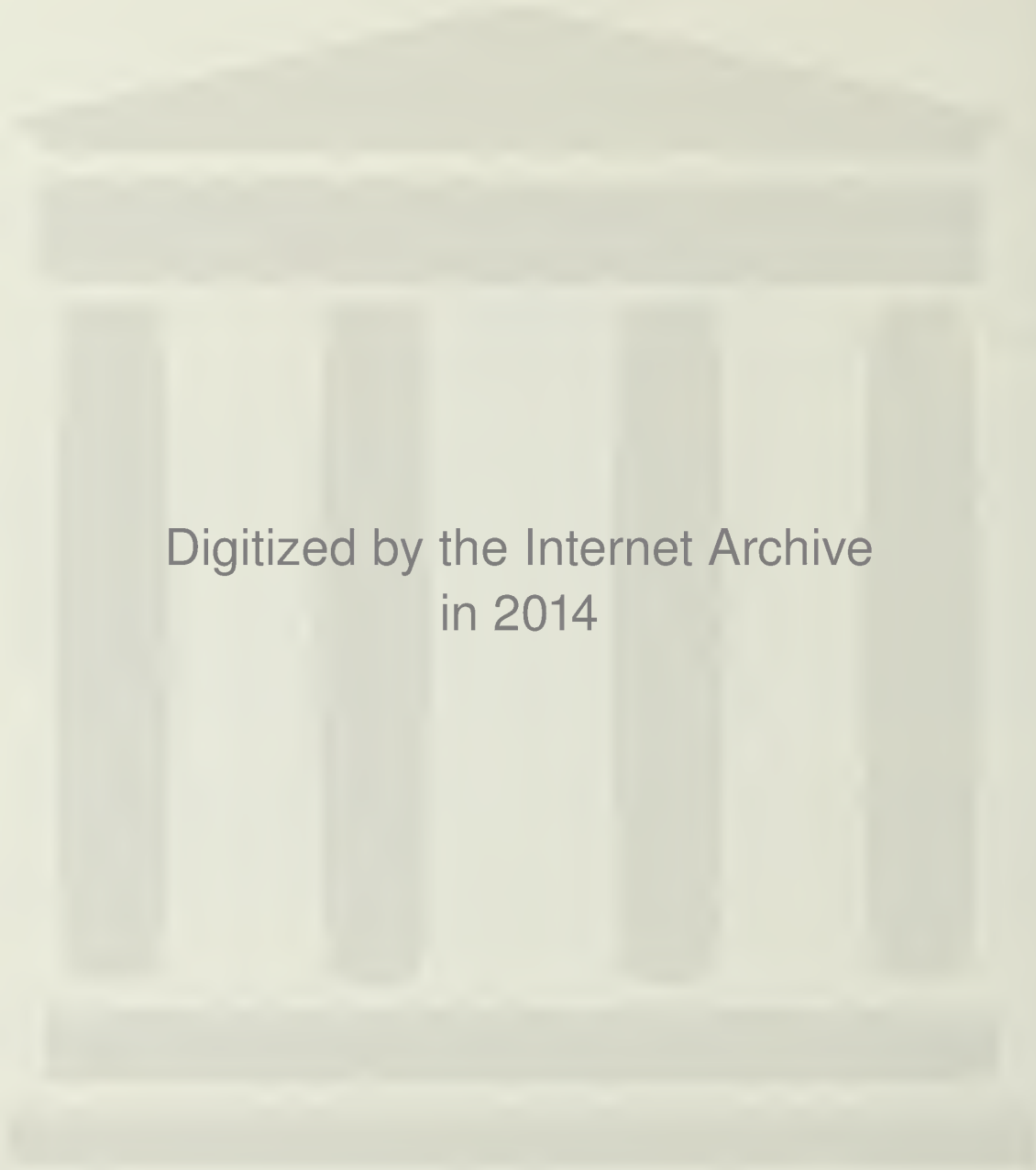
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DRAFT ENVIRONMENTAL IMPACT REPORT

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I. SUMMARY

A. PROJECT DESCRIPTION

The proposed project is the implementation of a renovation and expansion plan by the California Academy of Sciences for its facilities in Golden Gate Park. The Project Sponsor's objective is to provide space for public exhibit, visitor service and research collections in order for the Academy to maintain its place as an institution of national stature into the next century. The project architect is Robinson, Mills and Williams of San Francisco.

The project consists of construction of a three-story (plus basement) new west wing building which would replace an existing one-story building (Bird Hall), addition of two new stories to an existing one-story-plus basement building (Science Hall), construction of a new one-story hall over the loading area which would link the Life Through Time exhibit with the Fish Roundabout, renovation of the ground floor and basement of Cowell Hall, enclosure of the entrance porch area at Cowell Hall; addition of bay windows (to house display exhibits) along the Life Through Time exhibit corridor (with aquarium support space below), renovation of the Blue Whale Courtyard (which would remain as an open air courtyard) and placement of a glass roof over the existing central courtyard to accommodate living natural history exhibits. The project would not result in construction outside the footprint of the existing facility; no additional Park property would be occupied. The total site area of the Academy is 201,200 sq. ft. Overall, the project would result in a 22% increase in the gross floor area of the Academy facilities.

The Academy is bordered on the northwest by the Music Concourse (across Academy Drive), on the southwest by the Shakespeare Garden, on the southeast by the Big Rec Ball Fields (across Middle Drive) and on the northeast by a meadow and woods within the Park.

If the project were approved and building permits issued, demolition, construction and occupancy would take two to six years depending on availability of funding. As of the date of this report, no applications for permits for the project have been filed.

Total cost for the project, including architectural and engineering fees would be about $30 million (1987 dollars).

B. ENVIRONMENTAL IMPACTS

LAND USE AND ZONING (pp. 23 - 27)

The project would include construction of new floor space, renovation of existing space and enclosure of covered areas at the existing Academy facilities. The project could lead to increased visitors to the Park with concomitant traffic effects. The project would continue existing uses at the site, and would not convert any open areas in the Park to new use. No permanent encroachment on to park land would result.

The site lies within a P (Public Use) District and an OS (Open Space) Height and Bulk District. The project would be a continuation of the existing public use of the site, the principal permitted use in a P District.

URBAN DESIGN (p. 27)

The proposed project would be in scale with existing on-site structures and with the nearby de Young and Asian Art Museums and would not substantially change the present view of the buildings and surroundings.

No scenic view or vista would be blocked due to the new construction. The proposed changes to the Academy would not be visible in long range views.

SHADOW (pp. 27 - 33)

The project would result in new shadow on the Music Concourse early in spring, winter and fall mornings. On December 21 (the day when the project would result in the most new shadow) the new shadow would be gone by 9:30 a.m. The project would be a continuation of recreational and park-related use on land under the jurisdiction of the Recreation and Park Commission. Accordingly, pursuant to City Planning Code Section 295(a)3, it would not be subject to Proposition K, the Park Shadow Ban Initiative.

TRANSPORTATION (pp. 33 - 46)

Project construction would take approximately two to six years. Site access and egress for construction purposes would be via the existing service drive to the Academy of Sciences from Middle Drive. No roadway, traffic lane or sidewalk closures or detours due to construction activities are anticipated.

A maximum of 12 construction truck round trips per weekday would be expected. Construction activities would take place primarily on weekdays and thus would not coincide with peak weekend park traffic. The volume of construction traffic associated with the project would not affect traffic associated with the project conditions in the Park.

It is estimated that upon implementation of the project about 1.9 million people could visit the Academy in 1994, which could translate into an increase (over 1986) in daily attendance at the Academy of about 1,710 persons per peak day (Saturdays, Sundays and holidays). The project could generate approximately 200 additional daily Muni trips, with about 19 of these occurring during the peak hour.

This report assumes that improvements to the Academy proposed as part of the project would result in a rise in attendance similar to that experienced after completion of the Fish Roundabout. Maximum increase in attendance at the Academy due to the project could be expected to occur in 1994, with the number of visitors dropping off after that.

On the basis of visitor attendance projections and modal split assumptions, the project, assuming conservative attendance projections, could create a new short-term parking demand of about 540 spaces per day on weekends. Parking in the eastern portion of the Park is currently at capacity on weekends. Because on a peak-attendance day parking in the vicinity of the Academy is at capacity, it is not possible to estimate where additional Academy visitors would park. Poor local parking conditions accompanied by potentially long walking distances could discourage people from visiting the Academy on weekends. This could lower visitor attendance estimates.

It is estimated that the project would generate an additional two to five service vehicle trips per day to/from the site. Additional project service vehicles would not be expected to interfere with existing Park traffic.

C. MITIGATION MEASURES (pp. 47 - 51)

Major measures identified that would mitigate potentially significant environmental effects include the following:

MEASURES PROPOSED AS PART OF THE PROJECT

- The Academy would implement a Transportation Systems Management Program. A member of the Academy staff has already been designated as a transportation broker to coordinate measures that would be part of a transportation management program.

- The project sponsor and construction contractor would meet with the Traffic Engineering Division of the Bureau of Engineering of the Department of Public Works, the Fire Department, Muni, the Recreation and Park Department and the Department of City Planning to determine feasible traffic mitigation measures to reduce traffic congestion during construction of this project.

- The Academy would hire a consultant to prepare a construction management plan to address concerns perceived by the Academy or raised through community outreach efforts. The construction management plan would address: 1) noise reduction measures, 2) time of construction activities, 3) scheduling of construction deliveries, 4) storage of construction materials, 5) construction traffic control measures (such as the use of flag persons), 6) construction-worker parking, and 7) coordination with the Recreation and Park Department and other institutions in the Park.

- The construction contract would require that the project contractor muffle and shield intakes and exhausts, shroud or shield impact tools, and use electric-powered rather than diesel-powered construction equipment, as feasible, so that noise would not exceed limits stated in the City's Noise Ordinance (Article 29, San Francisco Administrative Code, 1972).

- The project sponsor would require the general contractor to construct barriers around the site, and around stationary equipment such as compressors, which would reduce construction noise by as much as five dBA, and to locate stationary equipment in pit areas or excavated areas, as these areas would serve as noise barriers.

- Construction activity which would generate a noise level in excess of 70 dBA, on the steps outside the Academy, would be suspended during any concerts in the Music Concourse.

- The project sponsor would require the general contractor to sprinkle demolition sites with water continually during demolition activity, sprinkle unpaved construction areas with water at least twice per day to reduce dust generation by about 50%, cover stockpiles of soil, sand, and other such material, cover trucks hauling debris, soil, sand, or other such material, and sweep streets surrounding demolition and construction sites at least once per day to reduce TSP emissions. The project sponsor would require the general contractor to maintain and operate construction equipment so as to minimize exhaust emissions of TSP and other pollutants by such means as a prohibition on idling motors when equipment is not in use or when trucks are waiting in queues, and implementation of specific maintenance programs (to reduce emissions) for equipment that would be in frequent use for much of a construction period.

- A detailed foundation and structural design study would be conducted for the proposed changes by a California-licensed structural engineer and a geotechnical consultant. The project sponsor would follow the recommendations of these studies during the final design and construction of the project.

D. ALTERNATIVES TO THE PROPOSED PROJECTS (pp. 53 - 57)

ALTERNATIVE A: NO PROJECT

This alternative would entail no change to the site. The project would not be implemented. The existing Academy facility would remain in its existing conditions, but Bird Hall would need to be seismically upgraded.

Another possible No-Project alternative could be the complete relocation of the existing Academy functions outside Golden Gate Park. The existing Academy buildings in the Park would be vacated. The Academy does not know where it would relocate; a new location of the Academy would not necessarily be in San Francisco or Northern California.

At this time, it would be too speculative to determine environmental impacts associated with a relocation of the entire Academy. No specific site is available and the range of possible sites is wide. In addition, because the Academy would have an opportunity to develop a completely new facility on some new site, the actual square footage and configuration of the uses and their resultant impacts would not necessarily be similar to either current conditions or to those of the proposed project. Depending on where the Academy may choose to relocate, the impacts under this alternative could be greater or lesser than those that would be associated with the Academy upon completion of the project.

Existing visitors who come to the Park solely to visit the Academy (approximately 700,000 people per year) would no longer use the Park for that purpose. An unspecified new use could occupy the Academy buildings which could have greater or lesser impacts than the existing Academy, or the Academy upon completion of the project. Alternatively, the Academy buildings could remain vacant and fall into disrepair and/or the Academy buildings could be demolished and the site returned to open space. Traffic in the park could be reduced or increased, but it is not feasible to quantify by how much.

ALTERNATIVE B: SMALLER PROJECT

This alternative would not include enclosure of the Central Courtyard and only one additional floor would be added to Science Hall (as opposed to two floors with the project). Bird Hall would be replaced with a two-story building (as opposed to a three-story building with the project).

This alternative would have similar effects on land use and transportation to those of the project. The additions to Bird Hall and Science Hall would not be visible from outside of the Academy, there would be no glass peaked roof over the central courtyard, and the entrance porch at Cowell Hall would not be enclosed. There would be no new shadow on Park land from this alternative.

ALTERNATIVE C: LARGER PROJECT

This alternative would include an additional three stories on Science Hall. Bird Hall would be replaced with a four-story building. This alternative would have similar effects on land use and transportation to those of the project. It would result in greater shadow

impacts on the Music Concourse than would those of the project. The new fourth floors of both Science Hall and Bird Hall would be entirely visible from the Music Concourse and the de Young Museum. The new fourth floors would also be visible from Middle Drive.

ALTERNATIVE D: RELOCATION OF ADMINISTRATIVE AND RESEARCH FUNCTIONS OF ACADEMY OUTSIDE GOLDEN GATE PARK

This alternative would result in the existing 187,230 gsf of administrative use and research facilities in the Academy being relocated outside the Park (to an undetermined location).

As the existing administrative space is not suitable for exhibit space, it is likely that the space would be used for storage, collection support or visitor and member services. There would be no change to the project as outlined in this EIR. The impacts of this alternative would be approximately the same as the project. It is not possible to quantify any potential differences in impacts. If the Academy were to relocate their administrative uses into a new building there could be environmental impacts (on traffic for example) in the vicinity of that building which would need separate environmental review.

II. PROJECT DESCRIPTION

A. PROJECT SPONSOR'S OBJECTIVES

The California Academy of Sciences proposes implementation of a renovation and expansion plan for its facilities in Golden Gate Park. The plan includes construction of about 56,200 square feet (sq. ft.) of new floor area, enclosure of 23,800 sq. ft. of existing outdoor area and renovation of about 49,585 sq. ft. of existing floor space. All project construction would occur within the footprint of existing buildings at the facility. The project sponsor's objective is to provide adequate space for public exhibit, visitor service and research collections which would support both the formal and informal science education mandate of the Academy. The project architect is Robinson, Mills and Williams of San Francisco.

B. PROJECT LOCATION

The California Academy of Sciences is located in Golden Gate Park (Lot 1 of Assessor's Block 1703) along the easterly edge of the Music Concourse (see Figure 1, p. 9). The facility is accessible from Academy Drive (main visitor's entrance) and Middle Drive (secondary visitor and service entrance). The existing facility has a site area of 201,200 sq. ft., all of which is completely within Golden Gate Park. The Academy is bordered on the northwest by the Music Concourse (across Academy Drive), on the southwest by the Shakespeare Garden, on the southeast by the Big Rec Ball Fields (across Middle Drive) and on the northeast by a meadow and woods within the Park.

The site is within a P (Public Use) district and an OS (Open Space) height and bulk district. Permitted uses in a P use district include public structures and uses of the City and other governmental agencies. There are no specified height and bulk limits in the OS height and bulk district. Height and bulk of buildings and structures are determined in accordance with the objectives, principles and policies of the City and County of San Francisco Master Plan; no building, structure or addition can be permitted within a P District unless it is in conformity with the Master Plan.

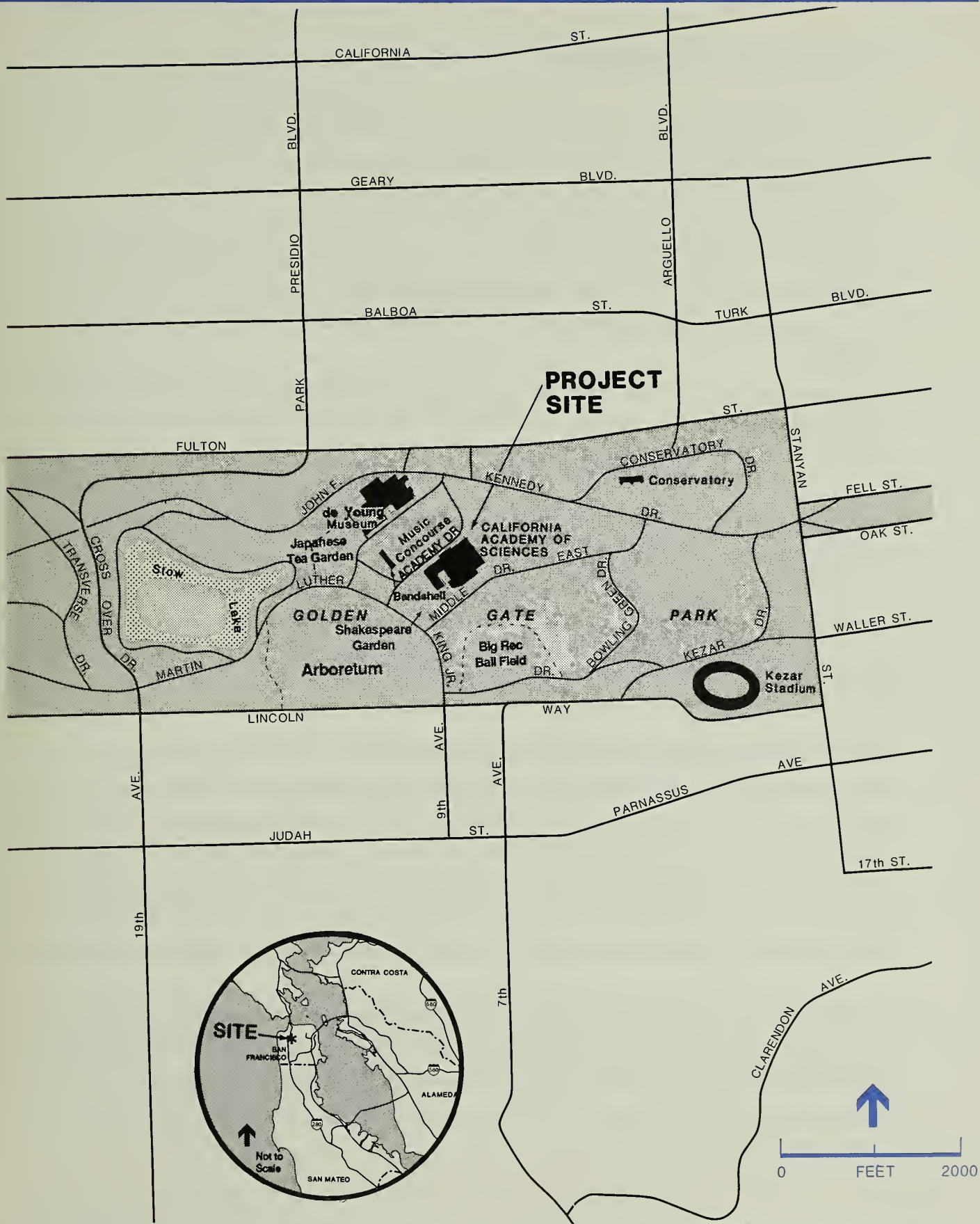

FIGURE 1
LOCATION MAP
CALIFORNIA ACADEMY OF SCIENCES

SOURCE: ESA

C. PROJECT CHARACTERISTICS

Project characteristics are summarized in Table 1. The project consists of construction of a three-story (plus basement) new west wing building which would replace an existing one-story building (Bird Hall), addition of two new stories to an existing one-story-plus-basement building (Science Hall), construction of a new hall over the loading area which would link the Life Through Time exhibit with the Fish Roundabout, renovation of the ground floor and basement of Cowell Hall, enclosure of the entrance porch area at Cowell Hall, addition of bay windows (to house display exhibits) along the Life Through Time exhibit corridor (with aquarium support space below), renovation of the Blue Whale Courtyard (which would remain as an open air courtyard) and placement of a glass roof over the existing Central Courtyard to accommodate living natural history exhibits.

In total about 56,200 gsf would be newly constructed additional floor area, 23,800 gsf of existing public area, would be enclosed and 49,585 gsf of existing area would be renovated or replaced (see Table 1). The project would not result in construction outside the footprint of the existing facility; no additional park property would be occupied. Figure 2, p. 12, shows the ground floor plan of the Academy as it would be upon completion of the project.

The overall project, including reassignment of existing space and addition of new area, would result in a 28% increase in space devoted to public exhibition, education and support, a 34% increase in area used by visitors and members (cafeteria space, etc.), a 16% increase in space for research collection and collection support, and a 16% increase in administrative office space. Overall, the project would result in a 22% increase in the gross floor area of the Academy facility (see Table 2, p. 13). The proportion of space assigned to each use would remain approximately the same as that of the existing facility.

Of the 80,000 sq. ft. of newly enclosed and additional floor area, about 49% (39,100 gsf) would be for public exhibition, education space and support, about 26% (20,500 gsf) would be for visitor and member services, about 21% (17,000 gsf) would be for research collections and collection support, and about four percent (3,400 gsf) would be for administrative offices.

TABLE 1: PROJECT CHARACTERISTICS

	Area (gsf)
Additional Floor Area	
Science Hall – 2nd and 3rd Floors	19,000
New West Wing (Replacing Bird Hall) – 2nd and 3rd Floors and Basement	26,800
Linking Hall Connecting Life Through Time Exhibit and Fish Roundabout	3,000
Mechanical and Storage Area under Central Courtyard	5,000
Bay Windows for Life Through Time Exhibit with Aquarium Support Space Below	2,400
	56,200
Existing Public Areas to be Enclosed	
Glass Enclosure of Entrance Porch at Cowell Hall	3,000
Glass Roof over Central Courtyard	20,800
	23,800
Existing Areas to be Renovated / Replaced	
Cowell Hall – Basement and 1st Floor	22,870
Science Hall – 1st Floor	9,915
Blue Whale Courtyard	9,300
New West Wing (Replacing Bird Hall) – 1st Floor	7,500
	49,585

SOURCE: California Academy of Sciences; and Robinson Mills & Williams.

The two-story addition to Science Hall and the new West Wing (replacing Bird Hall) would result in two three-story buildings each about 50 ft. tall, compared to the existing 25 ft.-tall Science Hall and the 30 ft.-tall Bird Hall.

D. PROJECT SCHEDULE, COST AND APPROVAL REQUIREMENTS

SCHEDULE

The project sponsor expects environmental review, project review and detailed design to be completed in late 1987. If the project were approved and building permits issued, demolition, construction and occupancy would take about two to six years depending on availability of funding.

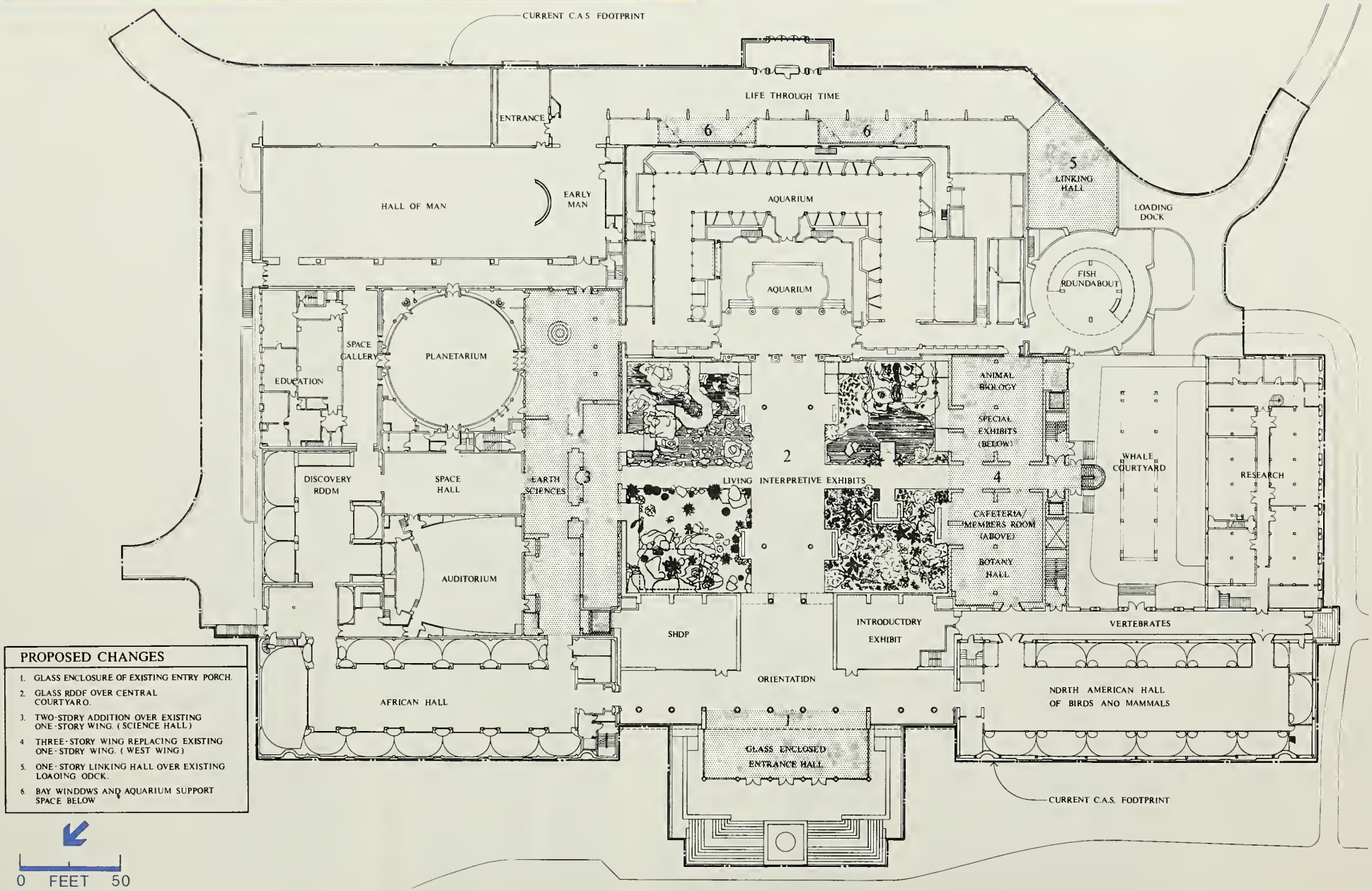

FIGURE 2

PROPOSED GROUND FLOOR PLAN

CALIFORNIA ACADEMY OF SCIENCES

SOURCE: ROBINSON MILLS & WILLIAMS

TABLE 2: PROPOSED PROJECT PROGRAM

Program Uses	Existing/a/ Enclosed Area/GSF	New Program Areas: Existing Revised Area (GSF)/b/		New Program Areas: Existing Public Areas to be Enclosed New Floor Area		Total Enclosed Area After Project Completion	Percentage Increase Over Existing Area
ACADEMY PROGRAM USES							
Public Exhibition, Education Space, and Support	152,156	155,856	+	39,100	=	194,956	28%
Visitor & Member Services	21,274	7,926	+	20,500	=	28,426	34%
Research Collections Collection Support	165,874	175,522	+	17,000	=	192,522	16%
GENERAL & ADMINISTRATIVE SUPPORT USES							
Admin. Offices	21,356	21,356	+	3,400	=	24,756	16%
TOTALS /c/	360,660	360,660	+	80,000	=	440,660	22%

/a/ All existing areas are derived from "Workshop Document, Institutional/Operational Planning and Building Programming, California Academy of Sciences, San Francisco, California," by E. Verner Johnson and Associates, dated November, 1982. Total area includes basement in North American Hall (13,335 gsf).
/b/ Includes reassignment of uses in existing enclosed space.
/c/ All totals are gross square feet. Mechanical and building services are pro-rated among the areas described above.

SOURCE: California Academy of Sciences; and Robinson, Mills & Williams.

Total cost for the project, including architectural and engineering fees, would be about $30 million in 1987 dollars./1/ The project would be occupied by the Academy; no portion of the project would be leased or rented to others.

APPROVAL REQUIREMENTS

A public hearing on the Draft EIR will be held before the City Planning Commission and responses to written and oral comments will be prepared. The EIR will then be revised and presented to the City Planning Commission for certification. No permits may be issued before the Final EIR is certified.

The project would require approval by the City Planning Commission, the San Francisco Arts Commission and the San Francisco Recreation and Park Commission. The San Francisco City Charter (Section 3.552) requires that the Board of Supervisors approve construction of new facilities in Golden Gate Park by a two-thirds vote of all members of the Board. If the project were approved by all of the above-mentioned bodies, the project sponsor must then obtain demolition, alteration, building and related permits from the Central Permit Bureau of the Department of Public Works. As of the date of this report, no applications for permits for the project have been filed.

NOTES - Project Description

/1/ Glen Angell, California Academy of Sciences, telephone conversation, March 12, 1987.

III. ENVIRONMENTAL SETTING

A. LAND USE AND ZONING

LAND USE

Land use in the vicinity of the project site consists of Park-related features such as the Shakespeare Garden, the de Young and Asian Art Museums, playing fields and wooded areas.

Adjacent to the Academy site on the northeast are woodlands and grass fields. Baseball fields are located about 500 feet southeast of the site across Middle Drive. Adjacent to the Academy to the southwest is the Shakespeare Garden while the Music Concourse, a landscaped outdoor performance area, is located across Academy Drive about 100 feet northwest of the site. The de Young and Asian Art Museums are about 700 feet northwest of the Academy.

The nearest non-Park uses to the Academy are the residential neighborhoods located north of Fulton Street about 1,000 feet north of the Academy, and south of Lincoln Way about 1,300 feet from the Academy.

The existing Academy facilities consist of a number of attached buildings with linking hallways and internal courtyards. The main visitor entrance fronts Academy Drive and is on the northwest side of the facility. A second visitor entrance, loading docks and a service entrance are accessible from Middle Drive, on the southeast side of the facility.

ZONING

The project site is within a P (Public Use) district. Land is zoned P when it is owned by a governmental agency and in some type of public use. Under the City Planning Code permitted uses in a P district are public structures and uses of the City and County of San Francisco or other governmental bodies. Under the City Planning Code, conditional uses permitted in a P district include non-profit charities, child-care facilities, schools,

churches, community and recreation centers and utility structures as required for adequate service (Sections 234.1 and 234.2). The California Academy of Sciences is located on land owned by the City and County of San Francisco (it is under the jurisdiction of the Recreation and Park Department); the Academy itself is a private organization providing a public service. Thus, the Academy is a permitted use within the P-district.

The site is also within an OS (Open Space) height and bulk district. The height and bulk of structures in an OS district is limited by objectives and policies of the City's Master Plan (City Planning Code, Section 290). Structures not in conformance with the Master Plan are not permitted in an OS District. The land in an OS height and bulk district is intended principally for open space, with future development limited. Applicable policies of the Master Plan, and the Plan for Golden Gate Park and the project's relationship to them are discussed in Chapter IV.A. Land Use Impacts, p. 23.

B. URBAN DESIGN

The existing Academy facility is visible in short- and some mid-range views (across the Music Concourse). Golden Gate Park is relatively flat with gently sloping topography, but trees tend to obscure mid- and long-range views. Outside the Park, the topography is more variable, with Mount Sutro visible to the southeast. Because of vegetation and other structures in the Park, the existing facility is not visible in long-range views.

Structures in the project vicinity consist of the de Young Museum, about 750 ft. northwest of the Academy across the Music Concourse, and the Conservatory, about 2,000 ft. northeast of the Academy. The Hall of Flowers is about 1,000 ft. south of the Academy, and the Tennis Courts/Pro Shop are about 2,750 ft. east of the Academy.

The existing California Academy of Sciences facilities consist of several buildings constructed over the past 70 years which are linked by interconnecting doorways and courtyards. The main visitor entrance fronting Academy Drive consists of a 100-foot-wide and 75-foot-deep porch which is elevated about six feet above street level. A 100-foot-wide stairway leads up to the entrance area from Academy Drive. The porch area is covered by a two-story-high overhang which is supported by six rectangular

concrete columns. Under this overhang, the front of the building is mostly glass with metal and concrete supports. On either side of the main entrance are two, two-story building wings which each extend about 200 feet laterally from the main entrance. The total length of the Academy building's frontage on Academy Drive is about 500 feet. The wings of the building are faced with concrete. There are no windows facing Academy Drive, although ornamental fenestration is visible on both wings.

The rear of the Academy facility is partially visible through a stand of pine and eucalyptus trees when viewed from Middle Drive. The building rear contains two levels of window courses and is set back about 150 feet from Middle Drive. The south side of the Academy is adjacent to the Shakespeare Garden and is only partially visible from the Shakespeare Garden because of intervening trees and shrubs. A below-grade loading dock, which is connected to Middle Drive by a curved driveway, is located on this side of the facility. Portions of the northern side of the Academy, faced with concrete blocks and unornamented windows, are visible from fields to the north.

The Academy contains a central open air courtyard which is about 150-feet long and 160-feet wide. This courtyard is completely surrounded by existing Academy facilities and is not visible from outside the Academy. The courtyard is accessible from the Earth and Life Sciences buildings, the entrance lobby and the Aquarium. A second open air courtyard lies within the south wing of the Academy. This courtyard is enclosed on three sides by Research and Life-Science buildings and the Fish Roundabout, and is directly accessible from the outside only at is southernmost corner. A whale skeleton is currently kept in this courtyard.

C. SHADOW

Existing and project shadow patterns for various times of the day and year are discussed in detail in Chapter IV.C., Environmental Impacts, pp. 27 to 33. Golden Gate Park is protected by Proposition K, the Park Shadow Ban initiative (Section 295 of the City Planning Code), as it is open space under the jurisdiction of the Recreation and Park Commission. Section 295(3) excludes structures to be constructed on property under the jurisdiction of the Recreation and Park Commission for recreational and park-related purposes.

D. TRANSPORTATION

Roadways immediately surrounding the California Academy of Sciences are part of Golden Gate Park's internal vehicular circulation system. The primary roadways in the vicinity of the site are described below, and shown in Figure 1, p. 9.

Kennedy Drive is the most heavily travelled east-west roadway in Golden Gate Park, with average daily traffic (ADT) of up to about 43,700 vehicles per day./1/ In the project vicinity, Kennedy Drive consists of four traffic lanes, with curbside parking available along both sides of the roadway. Access to the California Academy of Sciences and the Music Concourse area is available from Kennedy Drive, via Tea Garden Drive.

Martin Luther King Jr. Drive (King Drive,formerly South Drive) is another major east-west roadway in Golden Gate Park. King Drive consists of two vehicle lanes, and is not as heavily travelled as Kennedy Drive. Traffic on King Drive ranges from 1,600 to 12,300 vehicles per day./1/ Curbside parking is available along both sides of this roadway in the vicinity of the project. Direct access is available to the project and the Music Concourse from King Drive, via Academy Drive.

Middle Drive is a two-lane connector street between Kennedy Drive and King Drive. Middle Drive runs in a northeast-southwest direction south of the California Academy of Sciences. Two service and employee entrances lead from Middle Drive to the Academy. There is also a visitor (pedestrian) entrance/exit point to the Academy along Middle Drive. Curbside parking is available along both sides of this roadway.

Tea Garden Drive runs along the northern side of the Music Concourse, directly in front of the de Young and Asian Art Museums. Tea Garden Drive provides access to the Music Concourse and adjacent parking area from Kennedy Drive. It runs one-way in a southerly direction, exiting onto King Drive. No curbside parking is allowed.

Academy Drive runs along the southern side of the Music Concourse, directly in front of the California Academy of Sciences. Academy Drive provides access to the Music Concourse and adjacent parking area from King Drive. It runs one-way in a northerly direction, exiting onto Kennedy Drive. Curbside parking is available along most of the eastern side of Academy Drive.

Lincoln Way is an east-west street running along the southern border of Golden Gate Park. Lincoln Way consists of four traffic lanes. Curbside parking is available along both sides of the street. The intersection of Lincoln Way and Ninth Avenue is a southern access point to Golden Gate Park in the vicinity of the Academy of Sciences.

Fulton Street is an east-west street running along the northern border of Golden Gate Park. Fulton Street consists of four traffic lanes. The intersection of Fulton Street and Eighth Avenue is the northern access point to Golden Gate Park nearest to the project site.

Eighth Avenue is a two-lane roadway running in a north-south direction. A segment of Eighth Avenue enters Golden Gate Park to provide access to Kennedy Drive from Fulton Street and the neighborhoods to the north of the Park. Curbside parking is available along both sides of Eighth Avenue as it enters the Park.

Ninth Avenue enters Golden Gate Park from the south. Ninth Avenue consists of two lanes running in a north-south direction where it enters the Park. Ninth Avenue provides access to King Drive from Lincoln Way and the neighborhoods to the south of the Park. Curbside parking is available only along the eastern side of Ninth Avenue as it enters the Park.

Crossover Drive (State Highway 1) is the most heavily travelled roadway in Golden Gate Park, with average daily traffic (ADT) of approximately 59,000 vehicles per day./1/ Crossover Drive runs in a north-south direction through Golden Gate Park, connecting 19th Avenue to the south and Park Presidio Blvd. to the north. The California Academy of Sciences lies to the east of Crossover Drive.

A combination of automobiles, transit buses, tour buses, bicycles, pedestrians, equestrians, and rollerskaters is likely to be found along roadways within the Park.

A selective road-closure program for recreational purposes is currently in effect on Sundays in Golden Gate Park. Park roadways partially closed on Sundays in the vicinity of the project include Kennedy Drive, Eighth Avenue, Tea Garden Drive, and Academy

Drive. The parking area around the Music Concourse is also closed on Sunday. During the road-closure period, automobiles transporting handicapped persons and Muni buses are allowed to travel on Tea Garden and Academy Drives, while only Muni buses may travel on Eighth Avenue and Kennedy Drive.

TRAFFIC

On weekdays, most traffic in Golden Gate Park occurs east of Crossover Drive. Traffic is generally concentrated on Kezar Drive (mainly commuters), and on Kennedy Drive, King Drive, and surrounding roadways which provide access to the Academy of Sciences, de Young and Asian Art Museums, and the Music Concourse area. Most of the Muni and tour bus traffic also occurs in the eastern portion of the Park on weekdays./1/

Traffic volumes in all portions of the Park increase on weekends. The eastern portion of the Park experiences higher traffic volumes than does the rest of the Park due to the number of visitors at the Academy of Sciences, the de Young and Asian Art Museums, the Japanese Tea Garden, the Music Concourse, the Conservatory, Stow Lake, and the Big Rec Ball Fields. The peak period for traffic in Golden Gate Park is on weekends or holidays during summer months, from about 1:00 p.m. to about 4:00 p.m./1/

TRANSIT

Golden Gate Park and its periphery are served by approximately 11 Muni routes. Five of these routes pass through the Park. Only the 44 O'Shaughnessy route directly serves the Academy of Sciences and the Music Concourse area.

PARKING

Approximately 200 off-street and curbside parking spaces exist adjacent to the Academy of Sciences in the Music Concourse area (the number of spaces varies, as curbside spaces are not marked). In addition, there are another 2,350 off-street and curbside spaces in the eastern portion of Golden Gate Park (east of Crossover Drive)./2/ The majority of these spaces are within walking distance (3,000 feet) of the Academy. Further curbside parking exists on Lincoln Way, Kezar Drive, and Fulton Street, at the Park's periphery and on other streets in surrounding neighborhoods.

Previous parking studies show parking demand throughout the eastern portion of Golden Gate Park to be essentially at capacity during weekend peak periods./3/ Demand for parking exceeds supply on Saturdays along Kennedy Drive (from the Conservatory to Tenth Avenue), King Drive (from Crossover to Ninth Avenue), as well as at the Stow Lake Boat House and the Music Concourse parking lots. On Sunday, demand exceeds supply along a greater portion of King Drive, and on Middle Drive, Kezar Drive, and Bowling Green Drive because of the closure of Kennedy Drive and the Music Concourse parking area./1/

In the western portion of the Park (west of Crossover Drive), demand for parking meets or exceeds supply only at lots adjacent to the Soccer Fields, Riding Academy, and Polo Field. Demand is generally less than supply on weekends elsewhere in the western portion of the Park./1/

There is also an existing demand for parking in Golden Gate Park from visitors who currently park along periphery streets and in surrounding neighborhoods. These visitors fill any excess capacity in Golden Gate Park when parking spaces become available./1/ It is unknown how many Park visitors currently park in the neighborhoods. A 1986 visitor survey at the Academy of Sciences provides some background data on the percentage of Academy visitors who park their vehicles outside of Golden Gate Park./4/ On a Saturday, when all Park roads are open to vehicular traffic, approximately 10% of Academy visitors surveyed who arrived by auto parked their vehicles outside the Park boundaries. These vehicles could have been parked along periphery roadways, such as Lincoln Way, or on streets further into the surrounding neighborhoods. About 45% of those Academy visitors who arrived by auto on a Sunday parked outside Golden Gate Park./4/ This increase on Sundays is probably due to the loss of on-street spaces, and the closure of the Music Concourse parking lot, as a result of the Sunday road closure program.

The Academy of Sciences has 57 employee parking spaces on-site which are accessible from Middle Drive. There are an additional eight service-vehicle parking spaces and four motorcycle spaces on-site. All employee automobile spaces are occupied during weekday working hours; however, on weekends at least 14 of these spaces are usually vacant./5/

NOTES - Transportation

/1/ Golden Gate Comprehensive Transportation Study, Phase I Report, Appendices, Jefferson Associates, Inc., July 1982.

/2/ San Francisco Recreation and Park Department, "Golden Gate Park: Parking Survey", October 1981.

/3/ Edwin Leong, San Francisco Department of Public Works, Bureau of Engineering, June 25, 1986.

/4/ Environmental Science Associates, Inc. conducted a survey of visitors to the Academy of Sciences on a weekday (June 19, 1986), a Saturday (June 21, 1986), and a Sunday (June 29, 1986) to gather data regarding visitor transportation mode, vehicle occupancy, and parking conditions.

/5/ Pam Wing, California Academy of Sciences, telephone conversation, March 12, 1987.

IV. ENVIRONMENTAL IMPACTS

An environmental evaluation application for the project was filed on February 4, 1986. On December 26, 1986, on the basis of an Initial Study, the Department of City Planning, Office of Environmental Review, determined that an Environmental Impact Report (EIR) was required. Issues determined as a result of the Initial Study to require no further environmental analysis included: Land Use, Reflected Light and Glare, Population, Construction and Operational Noise, Construction and Operational Air Quality, Public Services and Utilities, Biology, Geology/Topography, Water, Energy/Natural Resources, Cultural Resources and Hazards. Therefore, this document does not discuss these topics (see Appendix A, pp. A-1 to A-31, for the Initial Study).

A. LAND USE AND ZONING

The project would be to construct new floor space, renovate existing space and enclose a portion of the uncovered areas within the existing Academy facilities. No construction would occur outside of the existing footprint of the Academy buildings. The project would continue existing uses at the site, and would not convert any undeveloped land in the park to new use.

The project could lead to increased visitors to the Park with concommitant traffic effects (see Chapter IV, Section D, p. 33).

The project would be continuation of the existing public use of the site, which is a principal permitted use in a P District.

The relationship of the project to relevant policies of the Plan for Golden Gate Park and of the Recreation and Open Space and Environmental Protection elements of the Master Plan is discussed in Tables 3 and 4, pp. 24 and 26.

Policy 9 of the Citywide Objective contained in the Recreation and Open Space Element of the Master Plan calls for the Development of a Master Plan for Golden Gate Park. To this end, Objectives and Policies for a Plan for Golden Gate Park were adopted by the

TABLE 3: RELATIONSHIP OF THE PROJECT TO MAJOR PROVISIONS OF THE PLAN FOR GOLDEN GATE PARK

Policy	Project Relationship
"Assure that Golden Gate Park continues to play a dominant role in the overall scenic, cultural and recreational environment that characterizes the City of San Francisco." (Objective I, Policy A)	The project would provide expanded facilities for future visitor-service, exhibit and administrative research needs of the Academy.
"Future development or design modifications within Golden Gate Park should not adversely affect the adjacent neighborhoods." (Object I, Policy A5)	The project could increase demand for parking spaces in neighborhoods near the park on weekends and holidays.
"The park should be protected from further encroachment by additional roadways." (Objective I, Policy B2)	The project would not result in construction or expansion of roadways. The existing Academy service driveway would be temporarily widened during construction.
"Where new recreational or cultural buildings are required for the enhancement of city-wide recreation resources, they should be located outside of Golden Gate Park." (Objective I, Policy C2)	The project would result in an expansion of existing uses through renovation and replacement construction. No new buildings would be built.
"Ensure that the essential design elements that give the park its unique landscape character are retained and protected." (Objective II, Policy A)	The project would not affect park landscaping or design.
"Restrict construction of additional recreational or cultural buildings in Golden Gate Park." (Objective III, Policy A)	The project would build onto, replace and renovate existing buildings in the Park. No new structures would be constructed in undeveloped areas of the park.
"Assure that modification or replacement of existing park buildings is compatible with the landscape character and historic form of the park, and does not diminish existing open space." (Objective III, Policy C)	The project would add to existing interior buildings of the Academy facilities. The additions to the existing buildings would be visible but would not rise above the existing planetarium dome. The peaked glass roof over the central courtyard would have a central peak rising about 17 ft. above the planetarium dome.

(Continued)

TABLE 3: RELATIONSHIP OF THE PROJECT TO MAJOR PROVISIONS OF THE PLAN FOR GOLDEN GATE PARK (Continued)

Policy	Project Relationship
(continued)	The proposed enclosure of the Academy entrance would be visible and would be in keeping with the existing architectural features of the Academy. No open space would be eliminated by the project.
"New structures, or substantially remodelled existing structures, should where feasible, incorporate solar assisted water and space heating systems, and solar assisted cooling systems." (Objective III, Policy E1)	The project would not include solar heating or cooling systems.
"Special emphasis should be given to achieving optimum [transit] service to the [Academy]." (Objective IV, Policy C2)	The project could generate about 19 Muni trips during the weekend peak hour. The Academy is in the process of preparing a Transportation Systems Management Program, which would include encouraging staff and visitor use of transit.
"Historic, environmental, educational and general information about the Park and activities therein should be made available to the resident and visitor through programs, tours, literature and exhibits." (Objective V, Policy B3)	The project would expand exhibit space at the Academy by 28% and visitor-service space by 34%.

SOURCE: San Francisco Recreation and Park Department, The Plan for Golden Gate Park, May 24, 1979 and Environmental Science Associates, Inc.

Recreation and Park Commission on May 24, 1979. This document indicates that part of the statement of purpose of the Objectives and Policies is to examine the future needs of viable institutions presently within the park, and where appropriate to accommodate these needs. The statement of purpose says, "Updating landscaping and facilities to keep pace with changes in our society will enable future generations to receive as great a living legacy as we inherited from our forebears." Policy C of Objective 3 in this document instructs:

TABLE 4: RELATIONSHIP OF THE PROJECT TO POLICIES OF THE OPEN SPACE AND RECREATION ELEMENT OF THE MASTER PLAN

Policy	Project Relationship
Preserve public open space (Citywide System, Policy 2).	Golden Gate Park is public open space. The project would not construct any new structures outside of the existing Academy footprint. No open space would be eliminated.
Gradually eliminate nonrecreational uses in parks and playgrounds and reduce automobile traffic in and around public open spaces (Citywide System, Policy 4).	The Academy provides educational and recreational uses for the public. The project would expand these uses by increasing space devoted to exhibits, visitor services, and research. The project could result in an increase in traffic volumes in the park.

SOURCE: San Francisco Department of City Planning, Recreation and Open Space Element of the Master Plan, July, 9 1987 and Environmental Science Associates, Inc.

Assure that modification or replacement of existing Park buildings is compatible with the landscape character and historic form of the Park, and does not diminish existing open space.

1. Where replacement of an existing building in the Park is clearly in the public interest, and is compatible with the Park's landscaped environment, it should not exceed the size of the previous structure.

2. Structural modifications resulting in expansion of an existing facility, including the California Academy of Science, the Asian Art Museum and the M.H. de Young Memorial Museum, should only be considered where:

   a. There is a clearly demonstrated need for a defined service to the public that cannot be met by modifications within the existing building.
   b. Sufficient, detailed proof is available that alternative sites outside the Park have been studied, and that the proposed addition can be located only in the area in question.
   c. The effects of the Park on the proposed addition have been fully assessed to ensure that expansion will not necessitate additional surface parking, access roads, or have a deleterious effect on the Park landscape.
   d. Sufficient effort will be expended to assure the very best architectural quality.
   e. Design plans for any proposed addition will include measures that will minimize visual impacts upon the Park environment.

B. URBAN DESIGN

The proposed project would be in scale with existing on-site structures and with the nearby de Young and Asian Art Museums, and would not substantially change the present view of the buildings and surroundings (see Figure 3, p. 28). The highest point of the existing Academy buildings is the planetarium dome at about 53 ft.; the New West Wing and Science Hall (with the two new stories above) would both be about 50-ft.-tall. The new glass roof over the central courtyard would have glass peaks which would be about 2.5 ft. above the dome, with a single center peak that would reach a height of about 70 ft.

No scenic view would be blocked due to the new construction. The proposed changes to the Academy would be visible from the Music Concourse and parking area in front of the Academy (see Figure 3, p. 28). Visitors to the de Young and Asian Art Museums, the Japanese Tea Garden, and the Music Concourse area would be able to see the proposed additions. The roof over the Central Courtyard and additional height on the West Wing and above Science Hall would also be visible from portions of Middle Drive adjacent to the Academy. The proposed changes to the Academy would not be visible in long-range views.

C. SHADOW

Shadow patterns for existing buildings in the project area (including the existing Academy buildings) and the additions proposed as part of the project are shown for 10 a.m., noon and 3 p.m. for the four seasons: during winter and summer solstices when the sun is at its lowest and highest, respectively, and during the spring and fall equinoxes when the sun is at its midpoint./1/ (See Figures 4 to 7, pp. 29 to 32). Conditions from July through November mirror the conditions from January through May (using solar time).

The project would be a recreational and park related use on land under the jurisdiction of the Recreation and Park Commission. Under City Planning Code Section 295(3), the project would be exempt from Proposition K, the Park Shadow Ban initiative.

The diagrams at 10:00 a.m., noon and 3:00 p.m. for all four seasons show that the project would result in new shadow only on the rooftops of the existing Academy facility during those times.

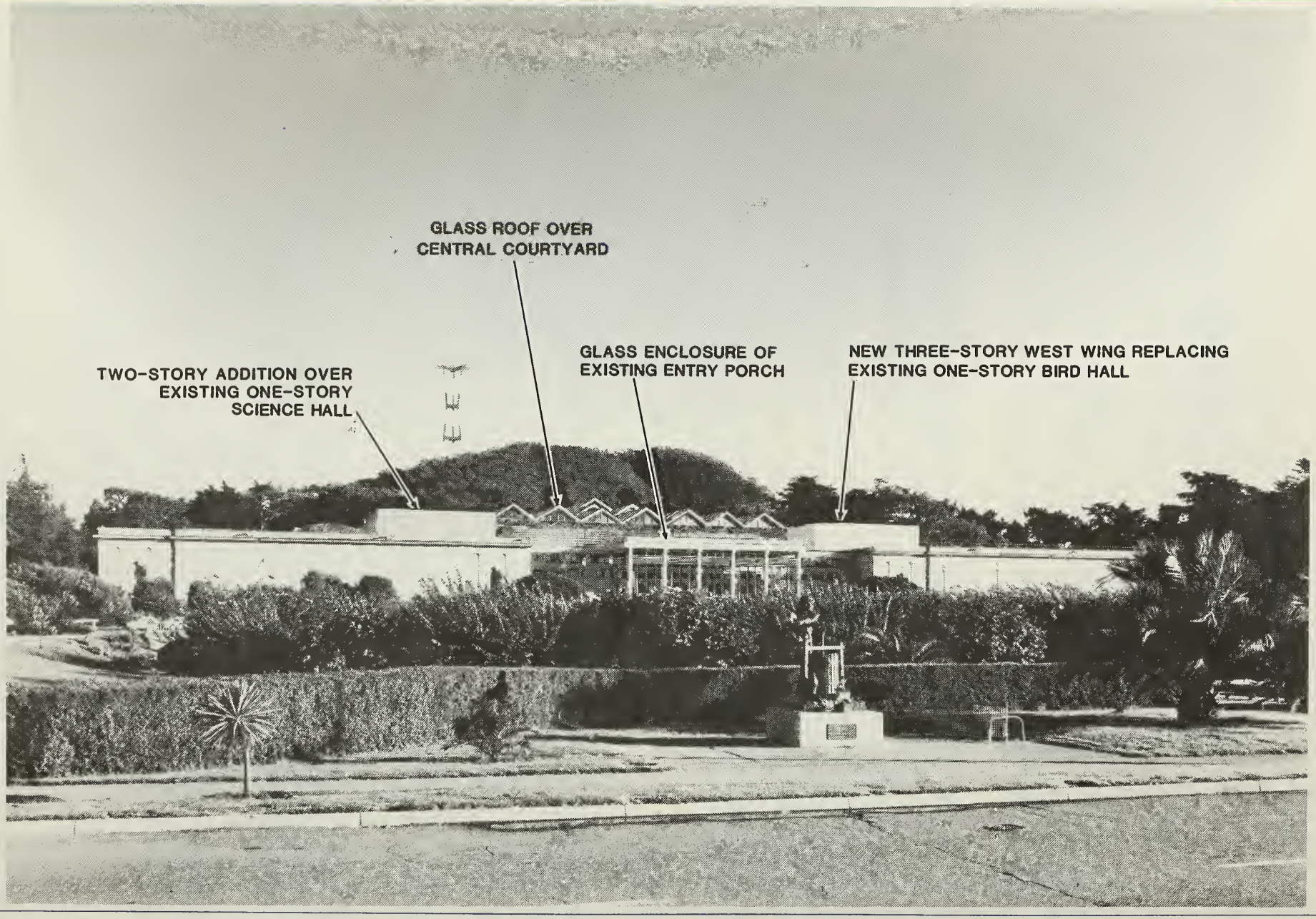

FIGURE 3
PHOTOMONTAGE SHOWING PROPOSED CHANGES TO THE CALIFORNIA ACADEMY OF SCIENCES

SOURCE: CALIFORNIA ACADEMY OF SCIENCES

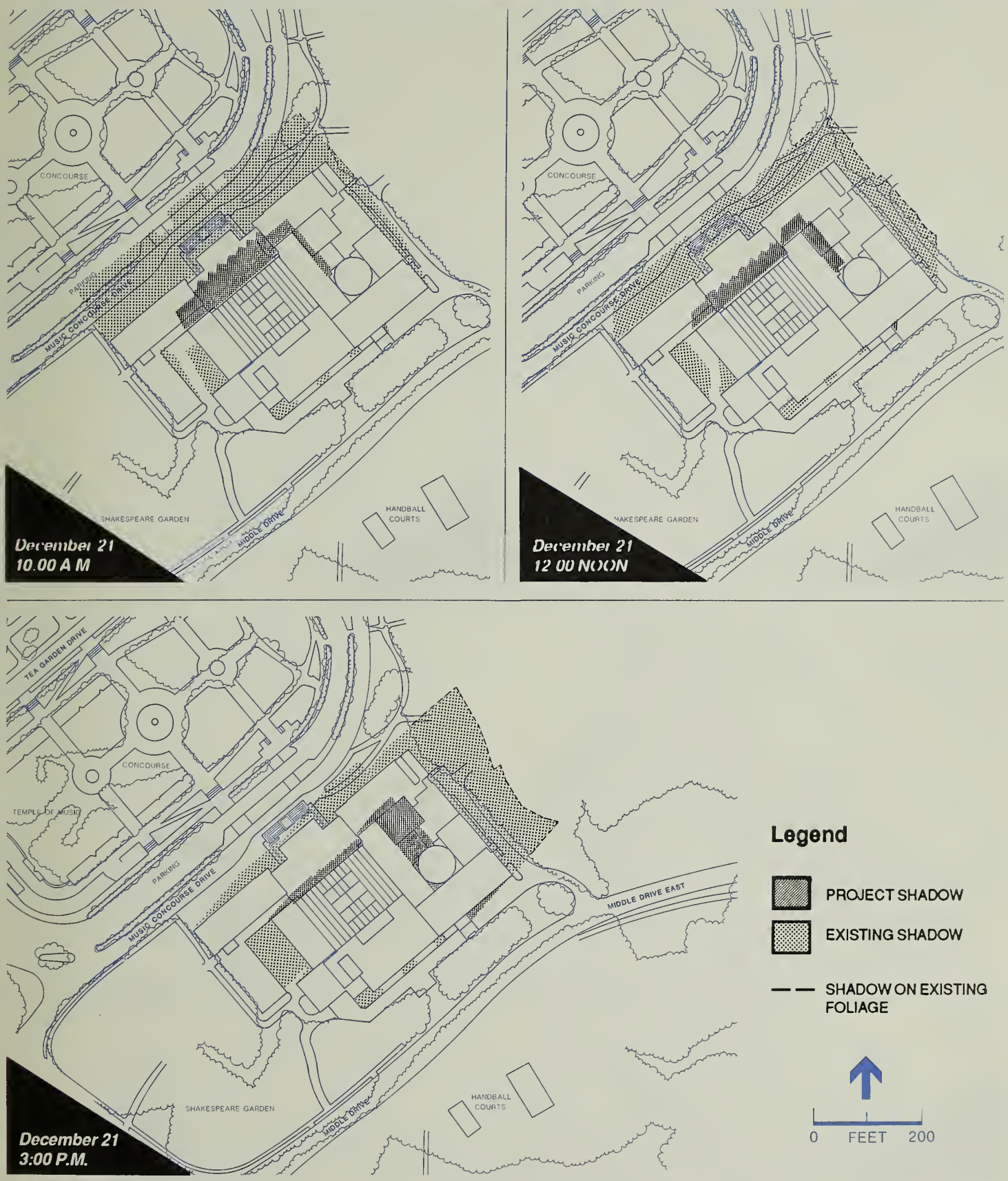

FIGURE 4

PROJECT SHADOW PATTERN-DECEMBER 21

SOURCE: ESA

CALIFORNIA ACADEMY OF SCIENCES

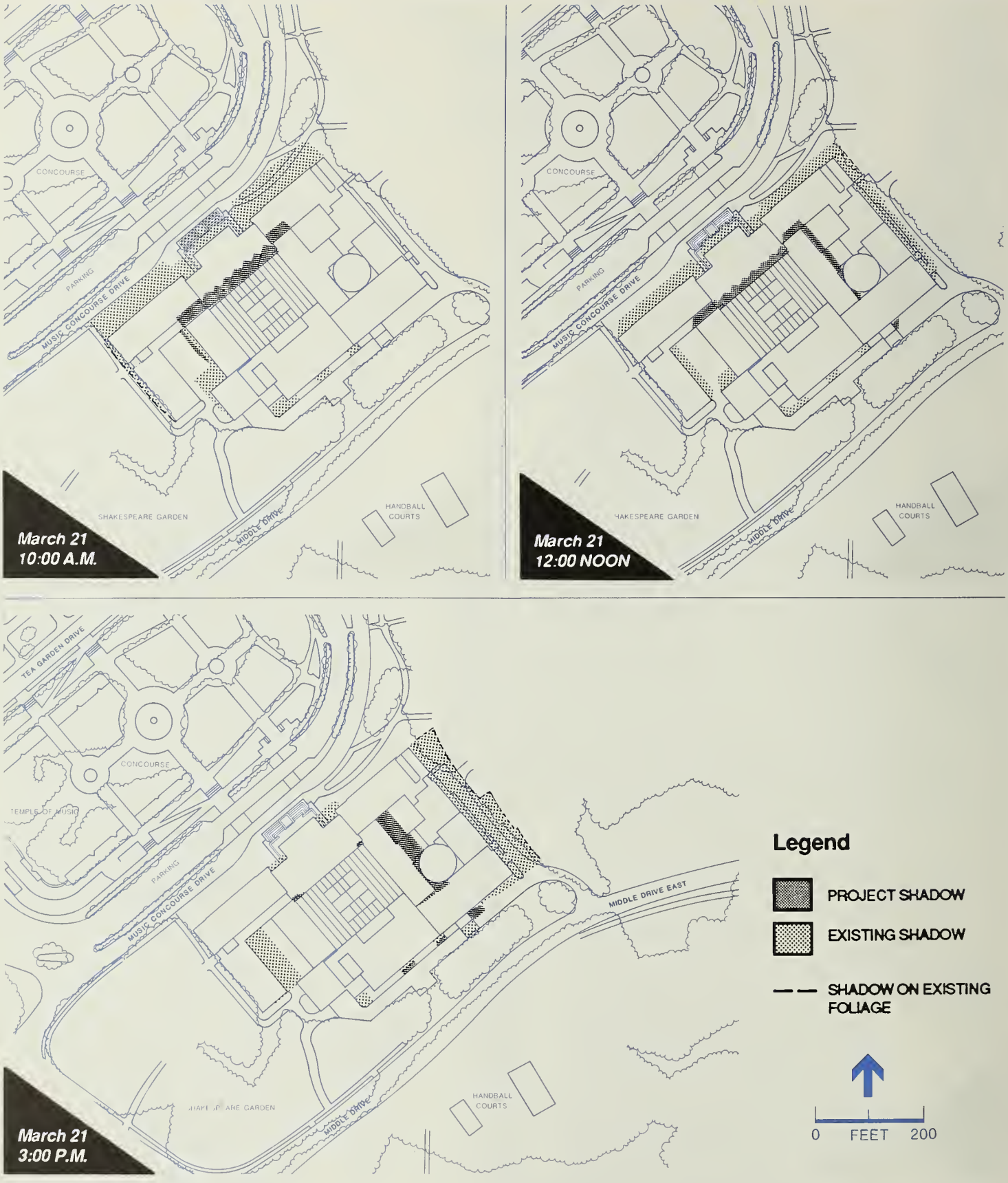

FIGURE 5

PROJECT SHADOW PATTERN-MARCH 21

SOURCE: ESA

CALIFORNIA ACADEMY OF SCIENCES

FIGURE 6

PROJECT SHADOW PATTERNS-JUNE 21

SOURCE: ESA

CALIFORNIA ACADEMY OF SCIENCES

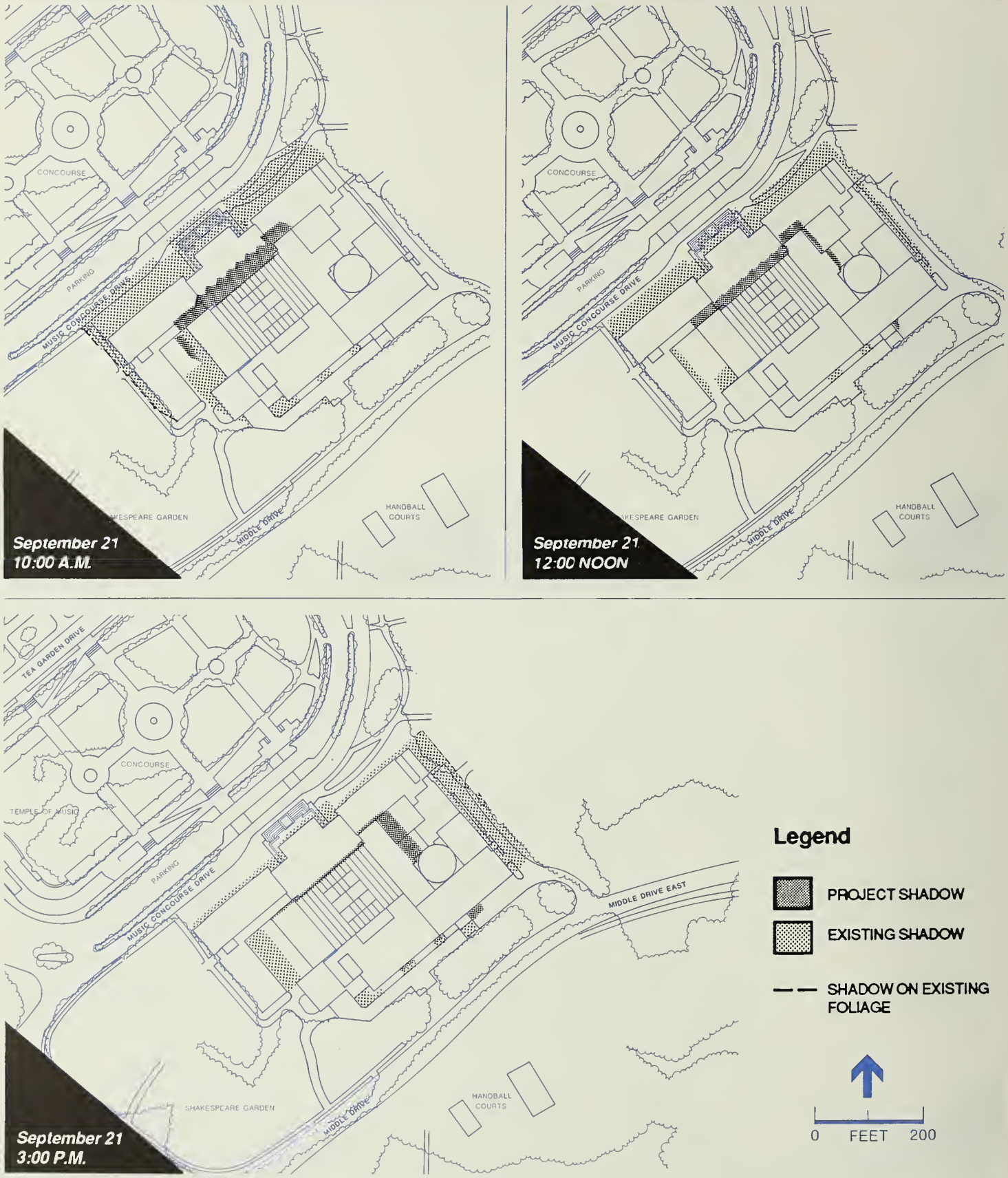

FIGURE 7

PROJECT SHADOW PATTERNS–SEPTEMBER 21

SOURCE: ESA

CALIFORNIA ACADEMY OF SCIENCES

An analysis was undertaken to determine any early morning or late afternoon shadows which would result from the project. Shadow diagrams were prepared for one hour after sunrise on June 21 (when the sun is at its highest) and for one hour before sunset on December 21 (when the sun is at its lowest). Neither of these diagrams revealed new shadow from the project other than on rooftops and parking area of the existing Academy facilities (see Figures 8 and 9, pp. 34 and 35).

A shadow diagram was also prepared for one hour after sunrise on December 21 (8:22 a.m.), when the sun would cast shadows from the project directly towards the Music Concourse (see Figure 10, p. 36). The project would cast an irregular strip of new shadow about 270 feet long and up to 75 feet wide on the Music Concourse at that time. On this day, new shadow from the project would disappear by about 9:30 a.m. This represents the greatest area and temporal extent of new shadow from the project. The project would cause varying amounts of new shadow (never more or lasting longer than on December 21) on the Music Concourse, parking area or road in front of the Academy during early mornings hours from August 20 through April 20. During January (and similarly during November), new shadows would not persist after about 9:00 a.m. During February (and similarly during October), no new shadow would occur after about 8:15 a.m.; in March no new shadow would occur after about 7:20 a.m. (similarly in September there would be no new shadow after about 8:20 a.m.) and in April (and similarly in August) no new shadow would occur after about 7:00 a.m./1/

NOTE - Shadow

/1/ Environmental Science Associates, Inc., California Academy of Sciences Shadow Analysis, August 1986. This analysis is on file and available for public review at the Department of City Planning, 450 McAllister St.

D. TRANSPORTATION

CONSTRUCTION ACTIVITIES

Project construction would take from two to six years. Site access and egress for construction purposes would be via the existing service drive to the Academy of Sciences from Middle Drive. It is expected that construction equipment and materials would be

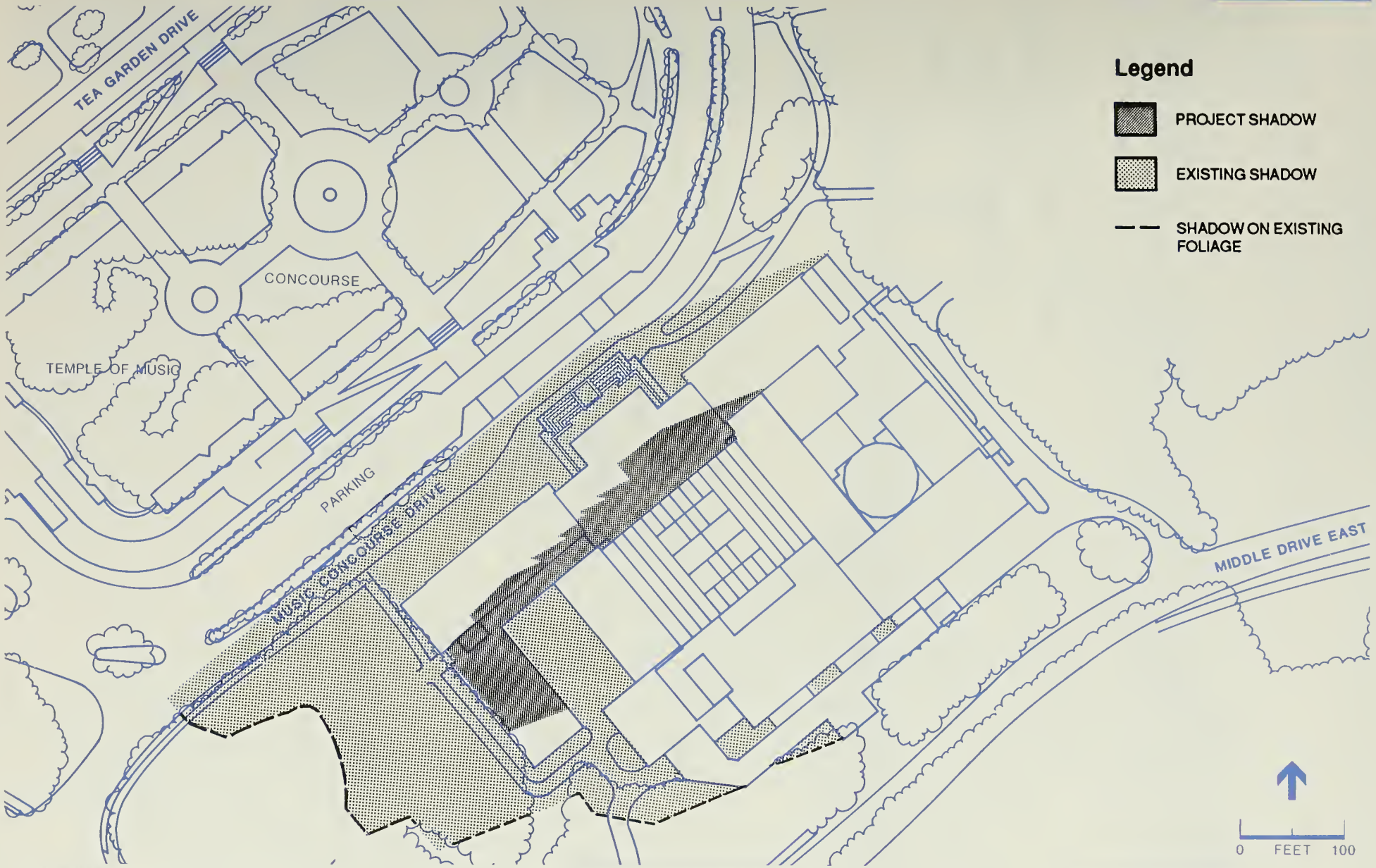

FIGURE 8

PROJECT SHADOW PATTERN–JUNE 21, 6:48 A.M.

SOURCE: ESA

CALIFORNIA ACADEMY OF SCIENCES

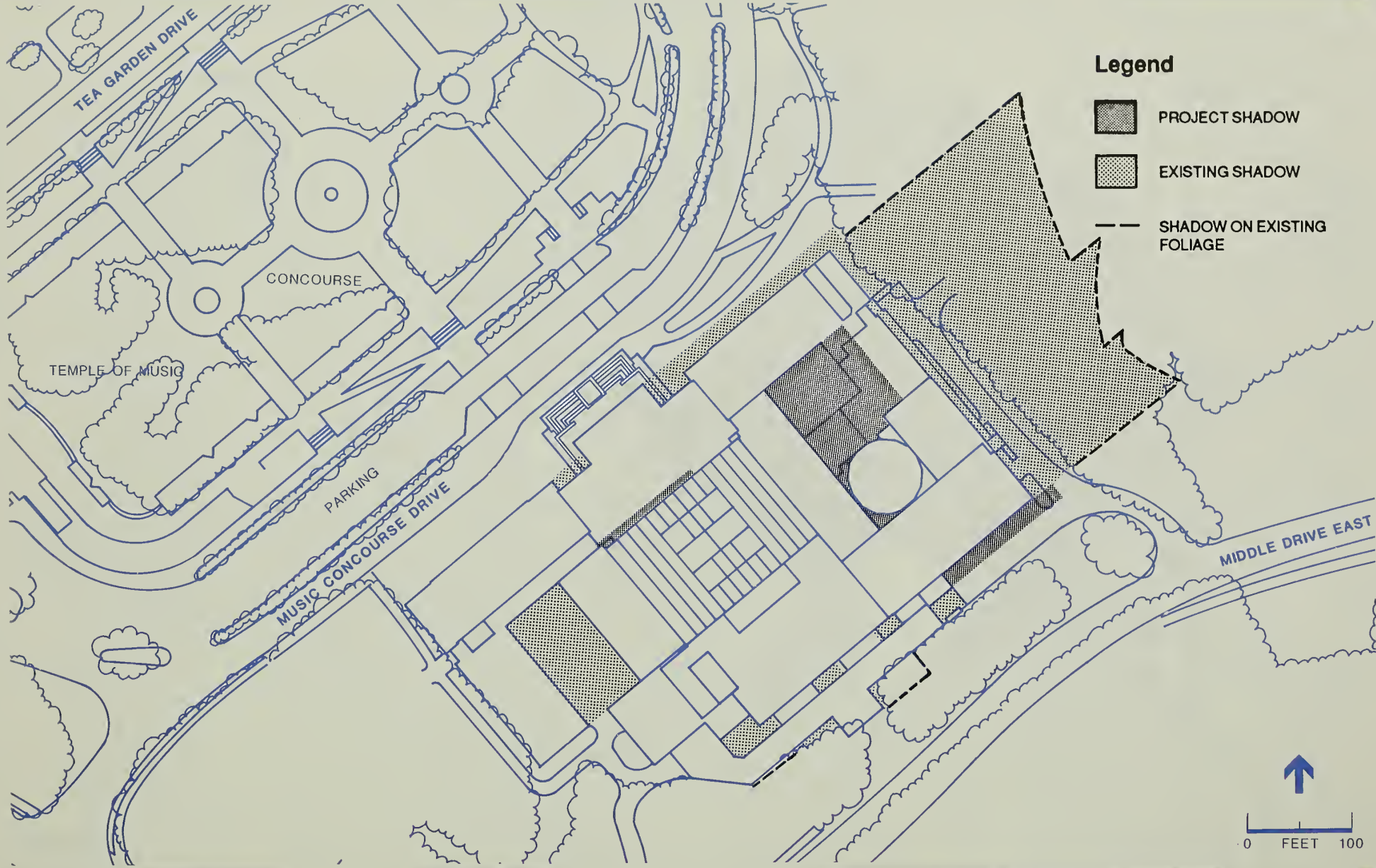

FIGURE 9

PROJECT SHADOW PATTERN–DECEMBER 21, 3:54 P.M.

SOURCE: ESA

CALIFORNIA ACADEMY OF SCIENCES

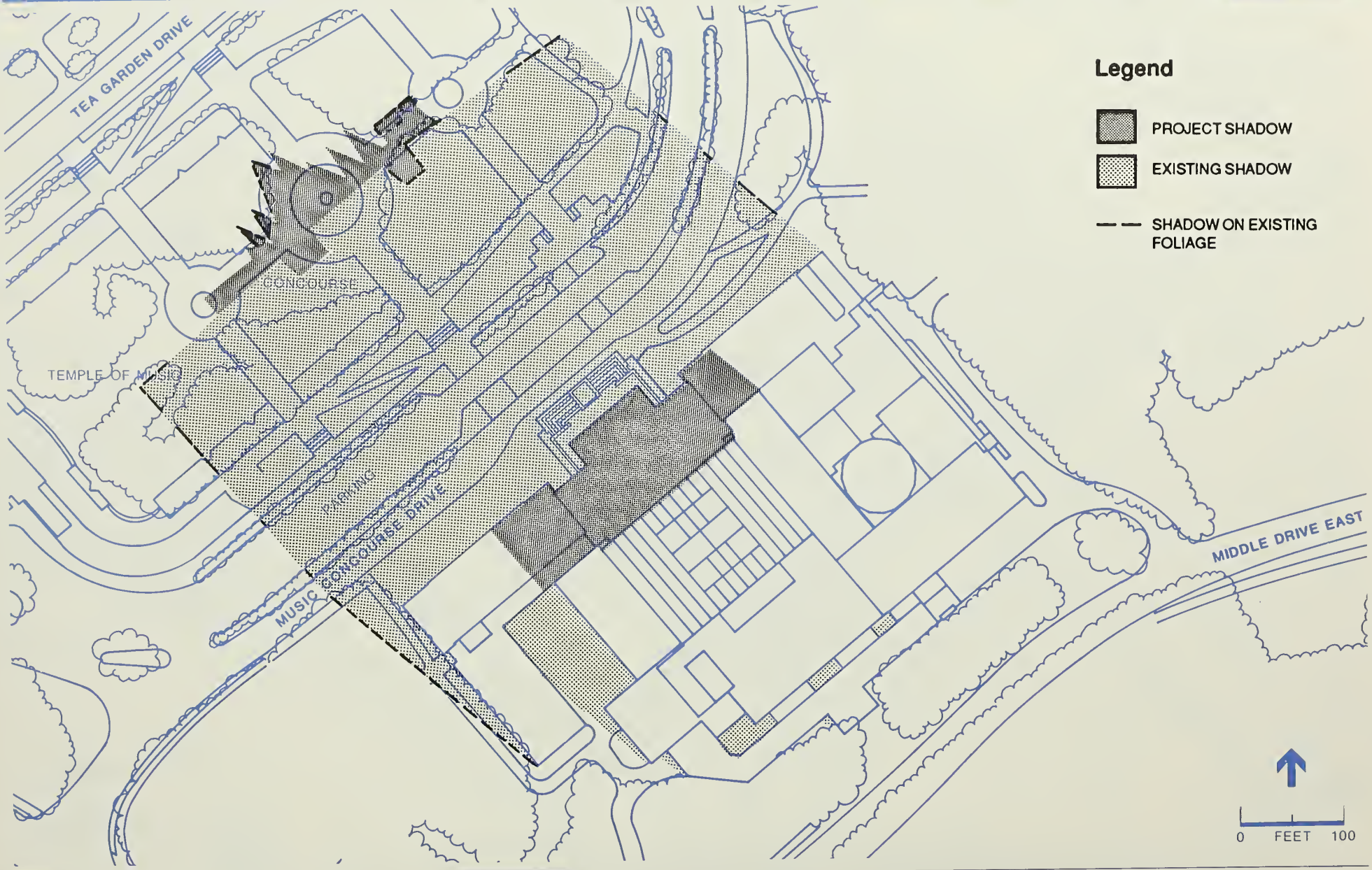

FIGURE 10

PROJECT SHADOW PATTERN-DECEMBER 21, 8:22 A.M.

CALIFORNIA ACADEMY OF SCIENCES

SOURCE: ESA

stored on-site in the Blue Whale Courtyard area. No roadway, traffic lane or sidewalk closures, or detours due to construction activities are anticipated. It is expected, however, that curbside parking along a portion of Middle Drive would be interrupted occasionally for staging of concrete pouring activities (estimated duration of about eight weeks)./1/

On average, project construction would generate four to five truck round trips per weekday to the site. A maximum of 12 construction truck round trips per weekday would be expected. Construction activities would take place primarily on weekdays and, thus, would not coincide with peak weekend Park traffic. The volume of construction traffic would not affect traffic conditions in the Park. Since the delivery, handling, and storage of construction materials would take place primarily on the project site, disruptions in vehicular traffic from such activities would not be expected except when deliveries to and from the site would occur later in the day on weekdays, when traffic levels around the site are higher than during early morning. Off-street parking for construction workers would be available at Kezar Stadium although parking on Middle Drive would be available during early weekday mornings. Construction activities could temporarily displace some existing on-site employee parking at the Academy of Sciences.

During project construction, the project would require temporary widening of the Academy's service vehicle driveway from Middle Drive to the Academy's loading area. This would involve removal of several feet of vegetation at the edge of the Shakespeare Garden and laying of asphalt./1/ After project construction is complete, this driveway would be returned to its existing condition. No permanent encroachment on the park land would result.

TRAVEL DEMAND

Estimates of travel generated by the project were developed through an analysis of historical attendance data for the Academy of Sciences; the estimates were not based on the total area and type of proposed uses. By examination of Academy attendance records for the period 1970 through the present, the number of additional visitors which could result from the proposed improvements was estimated. The mode of travel of these additional visitors was determined on the basis of data collected in a visitor survey at the Academy./2/

Annual visitor attendance from 1970 (the year an admission fee was first collected at the Academy), is presented in Table 5. As with any public educational/recreational facility, a range of factors influences attendance patterns at the Academy. Some of these factors include: tourism trends in San Francisco, special exhibits at the Academy of Sciences, special exhibits at the nearby de Young and Asian Art Museums, parking limitations, permanent improvements to the Academy's facilities, and the effectiveness of promotional campaigns./3/ Historically, admission price levels at the Academy of Sciences do not appear to have influenced visitor attendance./4/ This does not mean, necessarily, that future price increases will have little or no effect upon visitor attendance. The Academy may increase prices in the future.

Visitor attendance data from the Academy of Sciences indicates that since 1970, an average of about 1.4 million people have visited the Academy annually, with a high of approximately 1.7 million in 1978 and a low of approximately 1.2 million in 1974. The historic peak coincided with the opening of the Fish Roundabout, an improvement to the Academy's Steinhart Aquarium and a popular permanent exhibit./3/

Attendance at museums, aquariums, and such facilities can peak for the first year or so after the addition of a major improvement or exhibit, and then decrease to previous levels (or growth trend lines). Visitor attendance at the Academy of Sciences followed this pattern after the addition of the Fish Roundabout.

The proposed improvements would take from two to six years to complete (depending on availability of funding) with individual exhibits being opened to the public over the course of that period. A maximum increase in attendance at the Academy due to the project could be expected to occur in 1994 if all new exhibits were opened at that time. However, because project construction would be phased (individual components of the project would be completed in advance of 1994), attendance could fluctuate over the two- to six-year construction and exhibit preparation period. Accordingly, fewer people could visit the Academy in 1994 than are projected below. Moreover, because construction activities would occur in major connecting halls and affect some existing exhibits, attendance could be less than indicated in Table 5.

Table 5, p. 39, shows a projected 1986 (pre-construction) annual attendance figure of approximately 1.6 million. (The following data indicates the spread of 1986 visitor attendance: 13% of total attendance (211,000) arrived before or after normal museum

hours for reasons including appointments, evening functions, classes, and Laserium; 11% of the total (175,000) is due to organized school groups, the presumption being that most of these groups come in chartered buses and not private cars; 93,000 people of the total took advantage of the free Wednesday program.) Table 5 shows that visitor attendance varies from year to year depending on special or permanent exhibits. As mentioned previously, visitor attendance is influenced by a variety of unpredictable factors. Staff of the Academy of Sciences estimate that the peak attendance in the year following completion of the proposed project to be about 1.75 million people. This report has added 10% to that estimate in order to provide a conservative analysis of impacts.

TABLE 5: ANNUAL VISITOR ATTENDANCE AT CALIFORNIA ACADEMY OF SCIENCES

Fiscal Year Ending 6/30	Attendance	% Difference from Previous Year	% Difference from Average Attendance/a/
1971	1,425,818	-	-1.0
1972	1,312,198	-8.0	-8.9
1973	1,307,923	-0.3	-9.2
1974	1,201,912	-8.1	-16.5
1975	1,360,819	+13.2	-5.5
1976	1,443,896	+6.1	+0.3
1977	1,529,680	+5.9	+6.2
1978	1,718,827	+12.4	+19.3
1979	1,522,700	-11.4	+5.7
1980	1,507,053	-1.0	+4.6
1981	1,481,551	-1.7	+2.9
1982	1,386,228	-6.4	-3.7
1983	1,320,344	-4.7	-8.3
1984	1,469,741	+11.3	+2.1
1985	1,472,172	+0.2	+2.2
1986	1,581,827	+7.4	+9.8
1994	1,925,000 /b/	+21.7	+33.7
1995	1,750,000	-10.0	21.5%

/a/ Average annual attendance from 1971 through 1986 is 1,440,170.
/b/ Staff of the Academy of Sciences estimate peak attendance in the year following completion of the proposed improvements to be about 1.75 million people. This report has added 10% to that estimate in order to provide a conservative analysis of impacts.

SOURCE: California Academy of Sciences

This report's projected 1994 visitor attendance with the project would represent an approximate 31% increase in annual visitors over the 1985 attendance level and a 22% increase over the 1986 level. As discussed above, the first year of project operation would represent the greatest increase in visitors, with attendance declining after that.

Without the proposed improvements, Academy attendance could be expected to fluctuate, as in the past, with increased visitor attendance during special exhibits.

The peak period for auto travel within Golden Gate Park is between 1 p.m. and 4 p.m. on Saturday, Sunday, and holiday afternoons during summer months, with the peak-hour occurring from about 2 p.m. to 3 p.m.

The 1.9 million annual attendance projection for 1994 with the project (which is a conservatively high projection) could translate into an increase (over 1986) in daily attendance at the Academy of about 1,710 persons per peak day (assuming peak day attendance increases at the same rate as annual attendances, and the percentage of the yearly attendance that a peak day represents remains constant)./5/ These additional daily visitors, along with proposed staff additions, could generate approximately 1,100 vehicle trip ends per day, with about 88 of these occurring during the afternoon peak hour. The project could also generate approximately 200 additional daily Muni trips, with about 19 of these occurring during the peak hour.

According to a 1986 Academy visitor survey, approximately 46% of weekend visitors interviewed stated they came to Golden Gate Park only to visit the Academy. The remaining 54% indicated that they had other reasons for visiting the Park./3/ (Other reasons for visiting the Park could include: picnicking, visiting the de Young and Asian Art Museums, the Tea Garden and concerts in the Park.) If these survey results are applicable to project visitors in 1994, approximately one-half of the additional 1,710 daily project visitors would travel to Golden Gate Park for reasons other than to visit just the Academy of Sciences. A portion of these additional project visitors could be regular users of the Park or visitors to other Park facilities who decide to visit the Academy of Sciences in 1994 because of the proposed improvements. This EIR, however, in order to present a conservative analysis, assumes that all additional project visitors would be new visitors to both the Academy of Sciences and to Golden Gate Park.

Six intersections in the vicinity of the Academy of Sciences are analyzed in this EIR./6/ These intersections are:

- Eighth Avenue / Kennedy Drive
- Kennedy Drive / Tea Garden Drive
- Tea Garden Drive / Martin Luther King Jr. Drive
- Academy Drive / Martin Luther King Jr. Drive
- Martin Luther King Jr. Drive / Ninth Avenue
- Ninth Avenue / Lincoln Way

Because the peak period of Park use occurs on either a weekend or holiday afternoon, weekend conditions during the peak period at the six intersections were examined.

Four of the six intersections identified are either partially or fully closed on Sundays. The King Drive/Ninth Avenue and Ninth Avenue/Lincoln Way intersections remain fully operational both days of the weekend. This report analyses all six intersections during the Saturday peak traffic period, and in addition, analyzes the King Drive/Ninth Avenue and Ninth Avenue/Lincoln Way intersections during the Sunday peak period./6/

The intersection of Lincoln Way/Ninth Avenue is controlled by a two-phase traffic signal. The intersections of Eighth Avenue/Kennedy Drive, Tea Garden Drive/Kennedy Drive and Tea Garden Drive/King Drive are T intersections, with stop signs on all three approaches. The intersection of Academy Drive/King Drive is a T intersection with no stop signs. The intersection of King Drive/Ninth Avenue is a T intersection with a stop sign on the westerly approach of King Drive.

Peak-hour vehicle turning movement volumes were analyzed to determine the level of service (LOS) of each intersection. The results of the analyses are shown in Table 6, p. 42, and descriptions of service levels are given in Appendix B, Table B-1, p. A-32.

The signalized intersection and the intersections with stop signs on all approaches were analyzed using a method for signalized intersections which yields a Volume-to-Capacity (V/C) ratio and an LOS for each intersection as a whole./7/ The unsignalized T intersections with a stop sign on one or no approaches were analyzed using a procedure for unsignalized T intersections which yields an LOS for the minor street approaches and for the left turn approach from the major street to the minor street; it does not yield a V/C ratio./8/

TABLE 6: EXISTING AND FUTURE WEEKEND PEAK-HOUR INTERSECTION LEVELS OF SERVICE

	Existing/a/				Existing + Project (1994)			
	Saturday		Sunday		Saturday		Sunday	
Intersection/Approach	V/C/b/	LOS/c/	V/C	LOS	V/C	LOS	V/C	LOS
Eighth Ave./Kennedy Dr.	0.71	C	--	--	0.72	C	--	--
Tea Garden/Kennedy Dr.	0.73	C	--	--	0.73	C	--	--
Tea Garden/King Dr.	0.71	C	--	--	0.73	C	--	--
Academy/King Dr. (King left-turn)	NA	B	--	--	NA	B	--	--
King Dr./Ninth Ave. (King left-turn)	NA	A	NA	A	NA	A	NA	A
King Dr./Ninth Ave. (King left-turn to Ninth)	NA	A	NA	C	NA	A	NA	D
Ninth Ave./Lincoln Way	0.79	C	0.79	C	0.79	C	0.82	D

/a/ Existing V/C and LOS based on counts taken June 14 and 15, 1986, 2:00 p.m. to 3:00 p.m.
/b/ Volume/Capacity ratio.
/c/ Level of Service.

SOURCE: Environmental Science Associates, Inc.

Each of the intersections was analyzed for two cases: existing conditions; and future 1994 conditions (assuming conservative attendance projections) with the project. Vehicles generated by the project (see travel demand discussion above) were added to the intersections on the basis of the distribution of existing traffic at these intersections.

Additional traffic attributable to the project in 1994 could cause conditions on the westerly approach of King Drive at the intersection of King Drive and Ninth Avenue, and conditions at the intersection of Ninth Avenue and Lincoln Way to deteriorate from LOS C to LOS D on Sundays (both intersections would continue to operate at LOS A and LOS C respectively on Saturdays). All other intersections analyzed would continue to operate at their existing levels of service with the addition of project traffic (see Table 6, above).

No data exists to analyze joint traffic impacts which could result from a combination of events in the Park (such as events at Kezar Stadium, a concert at the Music Concourse, special exhibits or features at the de Young Museum, etc.) The traffic analysis in this report includes data collected during a period when major special exhibits were taking place at both the Academy of Sciences (Gary Larson Exhibit) and the de Young and Asian Art Museums (New Impressionism Exhibit). The traffic analysis in this report represents a conservative approach for the project for a number of reasons: First, because the estimated number of visitors is a conservative estimate and in addition all these new visitors to the Academy are assumed to be new to the Park; and second, because the projected number of visitors was added to traffic conditions experienced on hot days in the summer of 1986 when two major exhibits were underway in the project vicinity.

TRANSIT

As stated in Chapter III, Transportation Setting, Golden Gate Park and its periphery are served by approximately 11 Muni routes. Five of these routes pass through the Park. Only the route 44 O'Shaughnessy directly serves the Academy of Sciences and the Music Concourse area.

The project could generate up to approximately 200 daily Muni trips, with about 19 of these trips occurring during the weekend peak hour. Daily weekend project travel on the Muni would represent approximately one percent of the average daily ridership for the route 44 O'Shaughnessy alone./9/ The ridership generated by the project would be within current daily fluctuations, and therefore would not result in a noticeable change in Muni services.

PARKING

On the basis of visitor attendance projections and modal split assumptions, the project, assuming conservative attendance projections, could create a short-term parking demand of about 540 spaces per day on weekends (this demand would be spread throughout the day). Motorists searching for already scarce

parking would add to traffic congestion and delays along Park roadways. Since parking in the eastern portion of the Park is currently at capacity on weekends, the additional parking demand from the project would extend into the western portions of the Park as well as the surrounding neighborhood streets. Existing capacity in the western portion of the Park should be able to accommodate the additional project demand./10/ Because much of this existing capacity west of Crossover Drive is not within a reasonable walking distance of the Academy (more than 3,000 feet), it is likely that many of the additional visitors would search for parking along neighborhood streets adjacent to the eastern portion of the Park. It is not possible to accurately estimate where additional Academy visitors would park.

Local parking conditions accompanied by potentially long walking distances (more than 3,000 feet) from west of Crossover Drive or certain neighborhood areas could discourage some people from visiting the Academy on weekends. This could lower visitor attendance estimates discussed previously.

The project could create a long-term parking demand for between 10 and 20 employee spaces per weekday (the project would add about 22 new employees to the existing staff). No additional employee parking is proposed as part of the project. Since the existing employee parking lot is full on weekdays, additional Academy employees would have to find curbside parking in the project vicinity or switch to another mode of travel. Since weekday parking conditions in the Park are not as severe as during weekends, curbside parking for additional Academy employees may be available. Also, additional Academy staff members would likely arrive early at the site, before Park visitors occupy these curbside spaces. On weekends, employee parking is usually available in the employee lot, and it is anticipated that it would continue to be in the future.

LOADING/SERVICE FACILITIES

It is estimated that the project would generate an additional two to five service vehicle trips per day to/from the site./11/ Service vehicles would continue to use existing loading facilities and a service roadway from Middle Drive. Additional project service vehicles would not be expected to interfere with existing Park traffic.

GOLDEN GATE PARK AND CUMULATIVE TRAFFIC

A transportation study for Golden Gate Park was prepared for the Recreation and Park Department by Jefferson Associates, Inc. The study was divided into two phases: data collection, and development and adoption of a Transportation Management Plan. The Plan was approved and adopted by the Recreation and Park Commission in July 1985. The aim of the Plan is to provide a set of actions to guide circulation improvements in Golden Gate Park. Actions recommended in the Transportation Management Plan are classified into two time phases: short-term, those that may be implemented in one to three years, and long-term, those that may be implemented in four to eight years (see Mitigation Measures, pp. 48 to 49)./12/

In 1984, the Greater Haight Ashbury Cumulative Assessment Report was prepared to assess the environmental impacts of various projects proposed for the Greater Haight Ashbury Area./13/ This area, which lies to the east of Golden Gate Park, is bounded by Anza/O'Farrell Street, Broderick Street, Roosevelt Way, Seventeenth Avenue, the southern boundary of UCSF, Kirkham Street, Ninth Avenue, Lincoln Way, and Stanyan Street. This report assesses specific cumulative projects in the Greater Haight Ashbury Area, adjacent to Golden Gate Park. It is not possible to project what traffic effects the project could cause in the Haight-Ashbury area because of the Academy's relatively distant location to that area. (Similarly traffic effects from the Haight-Ashbury area cannot be reliably projected to intersections in Golden Gate Park in the vicinity of the Academy.)

NOTES - Transportation

/1/ Glen Angell, Project Manager, California, Academy of Sciences, telephone conversation, March 11, 1987.

/2/ ESA coordinated a survey of visitors to the Academy of Sciences on a weekday (June 19, 1986), a Saturday (June 21, 1986), and a Sunday (June 29, 1986) to gather data regarding visitor transportation mode, vehicle occupancy, and parking conditions.

/3/ "California Academy of Sciences and Its Visitors," Results of Visitor Survey by the California Academy of Sciences, January 1984.

/4/ Pamela Wing, Public Information Office, California Academy of Sciences, telephone conversation, June 24, 1986.

/5/ To calculate the increase in visitors to the Academy which could result from the project, on a peak day, attendance on the peak day in 1986 (January 19), when an

attendance fee was charged (admittance to the Academy is free on the first Wednesday of every month; on these days peak attendance reached 16,475 people; however this day does not coincide with park peak hours), was used to project attendance on a peak day in 1994. The percentage of the 1986 yearly attendance which the peak day attendance represented, was about 0.51% (attendance on the peak day during the peak month in 1986 was 8,108 people; the yearly attendance for 1986 was 1,581,827). Taking 0.51% of the projected 1994 yearly attendance of 1,925,000 (projected attendance if the project is completed) gives a projected peak day attendance of about 9,818 people. Therefore, the projected increase in visitors at the Academy on a peak day during a peak month in 1994 (after the project is completed) could be 1,710 people.

/6/ The six intersections were counted by ESA during the peak hour of 2:00 p.m. to 3:00 p.m. on Saturday, June 14, 1986. The King Drive / Ninth Avenue and Lincoln Way / Ninth Avenue intersections were counted on Sunday, June 15, 1986, during the same peak hour of 2:00 p.m. to 3:00 p.m. Both afternoons were sunny and warm.

/7/ "Interim Materials on Highway Capacity," Transportation Research Circular No. 212, Transportation Research Board, 1985.

/8/ "Unsignalized Intersections (Chap. 10)," Highway Capacity Manual (Special Report 209), Transportation Research Board, 1985.

/9/ San Francisco Municipal Railway, Short-Range Transit Plan, 1985-1990, June 1985.

/10/ Jefferson Associates, Inc., Golden Gate Park Comprehensive Transportation Study, Phase I Report, Appendices, July 1982.

/11/ Glen Angell, Project Manager, California Academy of Sciences, letter dated May 20, 1986.

/12/ San Francisco Recreation and Park Department, Golden Gate Park Transportation Management Plan - A Proposal for Citizen Review, February 1985.

/13/ San Francisco Department of City Planning, Greater Haight-Ashbury Cumulative Assessment Report, September 1984.

V. MITIGATION MEASURES PROPOSED TO MINIMIZE THE POTENTIAL ADVERSE IMPACTS OF THE PROJECT

In the course of project planning and design, measures have been identified that would reduce or eliminate potential environmental impacts of the proposed project. Some of these measures have been, or would be, adopted by the project sponsor or project architects and contractors and thus are proposed; some are under consideration; and some have been rejected. Implementation of some may be the responsibility of public agencies. Measures under consideration or measures rejected by the sponsor may be required by the City Planning Commission as conditions of project approval.

Each mitigation measure with its status is discussed below. Where a measure has not been included in the project, the reasons for this are discussed.

Mitigation measures below preceded by an asterisk (*) are from the Initial Study (see Appendix A, pp. A-1 to A-31).

TRANSPORTATION

MEASURES PROPOSED AS PART OF THE PROJECT

- The project sponsor and construction contractor would meet with the Traffic Engineering Division of the Bureau of Engineering of the Department of Public Works, the Fire Department, Muni, the Recreation and Park Department and the Department of City Planning to determine feasible traffic mitigation measures to reduce traffic congestion during construction of this project.

- The Academy would hire a consultant to prepare a construction management plan to address concerns perceived by the Academy or raised through community outreach efforts. The construction management plan would address: 1) noise reduction measures, 2) timing of construction activities, 3) scheduling of construction deliveries, 4) storage of construction materials, 5) construction traffic control measures (such as the use of flag persons), 6) construction-worker parking, and 7) coordination with the Recreation and Park Department and other institutions in the Park.

The Academy would appoint a construction manager who would be responsible for implementing the construction management plan, receiving any complaints regarding construction activities from the community, and making any necessary adjustments to the construction management plan. The Academy would work with the community to minimize and regulate any construction impacts of the project.

- The Academy would implement a Transportation Systems Management Program. A member of the Academy staff has already been designated as a transportation broker to coordinate measures that would be part of a transportation management program. The broker would coordinate with the Recreation and Park Department as well as with Muni and the Department of Public Works, in arranging and assessing measures to reduce traffic and parking problems. Such measures may include: providing increased information as part of the Academy publicity program on transit and bicycle access to the Academy, encouraging staff use of Muni by on-site sale of "Fast Passes," encouraging staff and visitor use of bicycles by provision of on-site, safe and secure bicycle storage facilities, encouraging use of contract shuttle services to the Academy by visiting groups, cooperating with the Recreation and Park Department in its efforts to arrange a van shuttle to and from parking located on the Park periphery, using methods to encourage visitor attendance during non-peak times (such as pre-selling tickets and discounting ticket prices for off-peak periods); establishing pricing policies for parking to encourage use of peripheral parking areas (either new parking lots or structures in residential areas away from the park), encouraging staff use of carpooling and transit by incentives such as transit pass discounts and preferential parking, and offering admission price discounts upon presentation of a Muni transfer or taxi receipt.

It is anticipated that some measures would be implemented directly by the Academy, some would be implemented in coordination with other Park institutions and others would be implemented by City agencies such as the Municipal Railway.

MEASURES WHICH COULD BE IMPLEMENTED BY PUBLIC AGENCIES

- A long-term action which could improve traffic conditions would be the development of a shuttle program for peak weekends and special events. The shuttle would operate from the Kezar Stadium grounds and would mainly serve the Music Concourse area, Conservatory, and Hall of Flowers. Such a program would have to take into account future remodeling plans for Kezar Stadium.

- Another long-term action which could improve existing traffic in the project area would be the realignment of Eighth Avenue to Tea Garden Drive, to form a common four-way intersection with Kennedy Drive. In replacing the Eighth Avenue/Kennedy Drive and Tea Garden/Kennedy Drive intersections, this realignment would reduce movement conflicts for vehicles entering and exiting the Music Concourse area.

CONSTRUCTION NOISE

MEASURES PROPOSED AS PART OF THE PROJECT

*- The construction contract would require that the project contractor muffle and shield intakes and exhausts, shroud or shield impact tools, and use electric-powered rather than diesel-powered construction equipment, as feasible, so that noise would not exceed limits stated in the City's Noise Ordinance (Article 29, San Francisco Administrative Code, 1972).

*- The project sponsor would require the general contractor to construct barriers around the site, and around stationary equipment such as compressors, which would reduce construction noise by as much as five dBA, and to locate stationary equipment in pit areas or excavated areas, as these areas would serve as noise barriers.

*- Construction activity which would generate a noise level in excess of 70 dBA, on the steps outside the Academy, would be suspended during any concerts in the Music Concourse.

CONSTRUCTION AIR QUALITY

MEASURE PROPOSED AS PART OF THE PROJECT

*- The project sponsor would require the general contractor to sprinkle demolition sites with water continually during demolition activity; sprinkle unpaved construction areas with water at least twice per day to reduce dust generation by about 50%; cover stockpiles of soil, sand, and other such material; cover trucks hauling debris, soil, sand, or other such material; and sweep streets surrounding demolition and construction sites at least once per day to reduce TSP emissions. The project sponsor

would require the general contractor to maintain and operate construction equipment so as to minimize exhaust emissions of TSP and other pollutants, by such means as a prohibition on idling motors when equipment is not in use or when trucks are waiting in queues, and implementation of specific maintenance programs (to reduce emissions) for equipment that would be in frequent use for much of a construction period.

GEOLOGY/TOPOGRAPHY

MEASURE PROPOSED AS PART OF THE PROJECT

*- A detailed foundation and structural design study would be conducted for the proposed changes by a California-licensed structural engineer and a geotechnical consultant. The project sponsor would follow the recommendations of these studies during the final design and construction of the project.

ENERGY

MEASURE PROPOSED AS PART OF THE PROJECT

*- The newly enclosed Central Courtyard would maintain a constant temperature by using a constant volume system with economizer. Heating and cooling would be supplied to the lower ten feet of space only. Above a height of ten feet, the air would be allowed to stratify. Exhaust fans would release hot air at the top of the atrium. In warm weather, outside air would be used for ventilation and cooling. In cold weather, hot air would be recirculated.

HAZARDS

MEASURES PROPOSED AS PART OF THE PROJECT

*- The Academy would review and update its evacuation and emergency response plan as necessary. The plan would be reviewed by the Mayor's Office of Emergency Services.

CULTURAL

MEASURE PROPOSED AS PART OF THE PROJECT

*- Should evidence of cultural or historic artifacts of significance be found during project excavation, the Environmental Review Officer (ERO) and the President of the Landmarks Preservation Advisory Board would be notified immediately, and any excavation which could damage such artifacts halted. The project sponsor would select an archaeologist or other expert to help the Office of Environmental Review determine the significance of the find and whether feasible measures, including appropriate security measures, could be implemented to preserve or recover such artifacts. The ERO would then recommend specific mitigation measures, if necessary.

Copies of reports prepared according to this mitigation measure would be sent to the California Archaeological Site Survey Office at Sonoma State University. Excavation or construction that might damage the discovered cultural resources would be suspended for a maximum of four weeks (cumulatively for all instances that the ERO has required a delay in excavation or construction) to permit inspection, recommendation and retrieval, if appropriate.

VI. SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

This chapter is subject to final determination by the City Planning Commission as part of its certification process for the EIR. Chapter IV of the Final EIR will be revised, if necessary, to reflect the findings of the Commission.

This chapter identifies significant impacts that could not be eliminated or reduced to an insignificant level by mitigation measures included as part of the project, as described in Chapter V., Mitigation Measures, pp. 47 to 51.

No project-specific significant impacts have been identified. Mitigation measures included as part of project as described in Chapter V., Mitigation Measures, pp. 47 to 51.

VII. ALTERNATIVES TO THE PROPOSED PROJECT

This chapter identifies alternatives to the proposed project, discusses environmental impacts associated with these alternatives, and gives the reasons the alternatives were rejected in favor of the project. Regardless of the sponsor's reasons for rejection, the City Planning Commission could approve an alternative instead of the project if the Commission believed the alternative would be more appropriate for the site.

A. NO-PROJECT

This alternative would entail no change to the site. The project would not be implemented. The existing Academy facility would remain in its existing condition; however, Bird Hall would need to be seismically upgraded. The environmental characteristics of this alternative would be generally as described in the Environmental Setting sections of the report (see Chapter III, Setting, pp. 15 to 22). Transportation impacts described in Chapter IV, Impacts pp. 23 to 46 would not occur.

The Academy has rejected this alternative because it believes that without the changes proposed as part of the project, its ability to serve the scientific and public education mandate of its charter would be impaired, attendance at the Academy would drop, existing exhibits would become outdated and the Academy would not continue to be an institution of national and international importance.

Another possible No-Project alternative could be the complete relocation of the Academy functions outside Golden Gate Park. The Academy does not know where it would relocate; a new location of the Academy would not necessarily be in San Francisco or Northern California. Potential sites could include: the Mission Bay planning area in San Francisco, which presently does not have an area reserved for institutional uses such as the Academy; a site in Berkeley that would be in proximity to the other science-related uses in that city; the redevelopment area of downtown Oakland, which could have a need for a facility such as the Academy to encourage further development in that area; or a site that would be near the population centers of the Bay Area and Sacramento but which could provide a more rural setting for the study and education of the Natural Sciences as well as room for potential future expansion.

At this time, it would be too speculative to determine environmental impacts associated with a relocation of the entire Academy. As noted, no specific site is available and the range of possible sites is wide. In addition, because the Academy would have an opportunity to develop a completely new facility on some new site, the actual square footage and configuration of the uses and their resultant impacts would not necessarily be similar to either current conditions or to conditions that could exist upon completion of the proposed project. Depending upon where the Academy may choose to relocate, the impacts under this alternative could be greater or lesser than those associated with the Academy upon completion of the project.

Existing visitors who come to the Park solely to visit the Academy (approximately 700,000 people per year) would no longer use the Park for that purpose. An unspecified new use could occupy the Academy buildings which could have greater or fewer impacts than the existing Academy, or the Academy upon completion of the project. Alternatively, the Academy buildings could remain vacant and fall into disrepair and/or the Academy buildings could be demolished and the site returned to open space. Traffic in the Park could be reduced or increased with this alternative, but it is not feasible to quantify by how much.

The Academy has rejected this alternative because it believes that relocation could result in the loss of the City's major resource for science education for public and private school pupils. Also, the Academy maintains that the cost of relocating the facilities would far exceed the cost of the proposed project and would thus not be feasible. The Academy has been located in Golden Gate Park since 1912, and the Academy believes that the people of San Francisco historically have associated the Academy's facilities with the Park.

In the opinion of the Academy, no significant project-specific environmental effects have been identified, and therefore, this proposed alternative would not result in any significant environmental benefit which would outweigh the negative impacts of the proposed alternative.

B. ALTERNATIVE B: SMALLER PROJECT

This alternative would not include enclosure of the Central Courtyard. One additional floor would be added to Science Hall (as opposed to two additional floors with the

project). Bird Hall would be replaced with a two-story building (as opposed to a three-story building with the project). Therefore, there would be 39,400 gsf of additional floor area (compared to 56,200 gsf with the project) 3,000 gsf of existing public areas to be enclosed (compared to 23,800 gsf with the project) and 49,585 gsf of existing areas to be renovated/replaced (as with the project). There would be 16,900 gsf less space for administrative, research, and exhibit space under this alternative than with the project.

This alternative would have similar effects on land use and transportation to those of the project. The additions to Bird Hall and Science Hall would not be visible from outside of the Academy, there would be no glass peaked roof over the Central Courtyard, and no newly enclosed entrance porch to Cowell Hall. No changes would be visible from outside the Academy. This alternative would result in no new shadow on any park land (the project would result in new shadow on the Music Concourse at 8:22 a.m. - one hour after sunrise on December 21st - which would last until about 9:30 a.m.).

The project sponsor has rejected this alternative because it would not meet the Academy's project objectives of upgrading exhibit space and providing improved visitor service facilities and because it would be inadequate to fulfill the mandate of the Academy to provide scientific education and research for the public. The Academy feels that disruption of functions through construction would not be justified by the resulting additional space. This limited effort could require either restrictions on the programs which the Academy would like to offer, or consideration of further expansion in the near future.

In the opinion of the Academy, no significant project-specific environmental effects have been identified, and therefore, this proposed alternative would not result in any significant environmental benefit which would outweigh the negative impacts of the proposed alternative.

C. ALTERNATIVE C: LARGER PROJECT

This alternative would include an additional three stories on Science Hall (compared to an additional two stories with the project). Bird Hall would be replaced with a four story building (as opposed to a three-story building with the project). This alternative would include 73,000 gsf of additional floor area (compared to 56,200 gsf with the project),

23,800 gsf of existing public area to be enclosed and 49,585 gsf of existing area to be renovated/replaced (both as with the project). The additional 16,800 gsf of space in this Alternative would be used for exhibits, visitor and member services, administrative space, collections support and research collections in approximately the same proportions as proposed in the project.

This alternative would not result in any more visitors than would the project; some additional staff could be required. This alternative would have similar effects on land use and transportation to those of the project. The new fourth floors of both Science Hall and Bird Hall would be entirely visible from the Music Concourse and the deYoung Museum. The new fourth floors would also be visible from Middle Drive. Because of the increased height of Science Hall and Bird Hall, this alternative would result in greater shadow impacts on the Music Concourse than would the project. The maximum length of new shadow on Park land at 8:22 a.m. on December 21 would be 94 ft. longer; this shadow would be gone by about 10:00 a.m. on this day. Like the project, this alternative would be a recreational and park related use on land under the jurisdiction of the Recreation and Park Commission. Under City Planning Code Section 295(3), the project would be exempt from Proposition K, the Park Shadow Ban initiative.

The project sponsor has rejected this alternative as the Academy does not need the 16,800 gsf of additional floor area which would be added by this alternative. It is the sponsor's belief that the space assignments included for the proposed project would meet the Academy's requirements well into the next century.

D. ALTERNATIVE D: RELOCATION OF ADMINISTRATIVE AND RESEARCH COLLECTION FUNCTIONS OF ACADEMY OUTSIDE GOLDEN GATE PARK

This alternative would result in the existing 187,230 gsf of administrative uses and research functions in the Academy being relocated outside the Park (to an undetermined location).

As the existing administrative and research space does not appear to be suitable for exhibit space because of low ceilings, difficulties with access and difficulty in meeting life safety requirements, it is likely that the space would be used for storage, collection support or visitor and member services; there would be no change to the project as outlined in this EIR. The additional space that would be for administrative and research

collection uses in the project would be used for storage and visitor and member services in this alternative. The impacts of this alternative would be approximately the same as the project. It is not possible to quantify any potential differences in impacts. There is a possibility, however, that this alternative could result in some of the existing and proposed administrative/research space being converted to exhibit space. More exhibit space could encourage more visitors to the Academy which would result in greater impacts on traffic and parking, although it is not feasible to quantify by how much.

If the Academy were to relocate their administrative uses into a new building there could be environmental impacts (on traffic for example) in the vicinity of that new building which would need separate environmental review.

The Academy has rejected this alternative because physically separating administrative and research collection functions from the rest of the Academy would result in inefficiency in Academy operations; and would make coordination of visitor amenities, tours, etc. and general administration of the Academy more difficult. The degree of interaction necessary for proper administration and management of an institution such as the Academy would require travel back and forth between the location of administrative functions and the Academy's existing facilities. The Academy believes that administrative personnel must be located on site.

In the opinion of the Academy, no significant project-specific environmental effects have been identified, and therefore, this proposed alternative would not result in any significant environmental benefit which would outweigh the negative impacts of the proposed alternative.

VIII. DISTRIBUTION LIST

FEDERAL AND STATE AGENCIES

State Office of Intergovernmental Management
State Clearinghouse
1400 - Tenth Street
Sacramento, CA 95814

Northwest Information Center
California Archaeological Inventory
Department of Anthropology
Sonoma State University
Rohnert Park, CA 94928
Attn: Christian Gerike

California Department of Transportation
Transportation Planning
P.O. Box 7310
San Francisco, CA 94120
Attn: Wallace Rothbart

California Department of Transportation
Public Transportation Branch
P.O. Box 7310
San Francisco, CA 94120
Attn: William Chastain

REGIONAL AGENCIES

Association of Bay Area Governments
P.O. Box 2050
Oakland, CA 94604

CITY AND COUNTY OF SAN FRANCISCO

Bureau of Building Inspection
450 McAllister Street
San Francisco, CA 94102
Attn: Larry Litchfield, Acting Superintendent

Landmarks Preservation Advisory Board
450 McAllister Street
San Francisco, CA 94102
Attn: Jonathan Malone, Secretary

Mayor's Economic Development Council
100 Larkin Street
San Francisco, CA 94102
Attn: Bill Witte, Director

Mayor's Office of Community Development
100 Larkin Street
San Francisco, CA 94102
Attn: Moira So

Public Utilities Commission
Bureau of Energy Conservation
110 McAllister Street, Room 402
San Francisco, CA 94102
Attn: John Deakin, Director

Recreation & Park Department
McLaren Lodge
Golden Gate Park
Fell and Stanyan Streets
San Francisco, CA 94117
Attn: Deborah Learner

Police Department
Planning Division
Hall Of Justice
850 Bryant Street
San Francisco, CA 94103
Attn: Lt. Thomas W. Suttmeier

San Francisco City Planning Commission
450 McAllister Street
San Francisco, CA 94102
Attn: Lori Yamauchi
Toby Rosenblatt, President
Yoshio Nakashima
Susan Bierman
Norman Karasick, Alt.
Bernice Hemphill
Richard Allen
Douglas G. Wright, Alt.
Donald Birrer
Rudy Nothenberg

San Francisco Department of Public Works
Bureau of Engineering
Division of Streets & Highways
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Attn: Vijay K. Gupta

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Traffic Engineering Division
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MUNI Planning Division
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25 Van Ness Avenue, 4th Floor
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Distribution Division
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California State University, Chico
Chico, CA 95929

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425 California St., Suite 2300
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Market Research Department
101 California Street, Suite 900
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P.O. Box 7256
San Francisco, CA 94126-7256
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3 Embarcadero Center
23rd Floor
San Francisco, CA 94111
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Chinatown Resource Center
1525 Grant Ave.
San Francisco, CA 94133
Attn: David Prowler

Coalition for San Francisco
Neighborhoods
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175 Yukon Street
San Francisco, CA 94114

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699 Serramonte Blvd.
Daly City, CA 94015
Attn: John Innes

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13 Columbus Avenue
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510 Harrison Street
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Associated Press
1390 Market Street, Suite 318
San Francisco, CA 94102
Attn: Bill Shiffman

San Francisco Bay Guardian
2700 Nineteenth Street
San Francisco, CA 94110
Attn: Patrick Douglas, City Editor

San Francisco Business Journal
635 Sacramento Street, Suite 310
San Francisco, CA 94111
Attn: Kirstin E. Downey

San Francisco Chronicle
925 Mission Street
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Attn: Evelyn Hsu

San Francisco Examiner
P.O. Box 7260
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Attn: Gerald Adams

San Francisco Progress
851 Howard Street
San Francisco, CA 94103
Attn: E. Cahill Maloney

The Sun Reporter
1366 Turk Street
San Francisco, CA 94115

Tenderloin Times
146 Leavenworth Street
San Francisco, CA 94102
Attn: Rob Waters

LIBRARIES

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San Francisco, CA 94102
Attn: Faith Van Liere

Environmental Protection Agency Library
215 Fremont Street
San Francisco, Ca 94105
Attn: Jean Circiello

Stanford University Libraries
Jonsson Library of Government Documents
State and Local Documents Division
Stanford, CA 94305

Government Publications Department
San Francisco State University
1630 Holloway Avenue
San Francisco, CA 94132

Hastings College of the Law - Library
200 McAllister Street
San Francisco, CA 94102-4978

Institute of Government Studies
1209 Moses Hall
University of California
Berkeley, CA 94720

IX. APPENDICES

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DEPARTMENT OF CITY PLANNING 450 McALLISTER STREET · SAN FRANCISCO, CALIFORNIA 94102

NOTICE THAT AN ENVIRONMENTAL IMPACT REPORT IS DETERMINED TO BE REQUIRED

Date of this Notice: December 26, 1986

Lead Agency: City and County of San Francisco, Department of City Planning
450 McAllister Street - 6th Floor, San Francisco, CA 94102

Agency Contact Person: Ivan Christie **Telephone:** (415) 558-5261

Project Title: California Academy of Sciences Improvement Project 86.58E

Project Sponsor: California Academy of Sciences

Project Contact Person: Frank Talbot

Project Address: California Academy of Sciences, Golden Gate Park

Assessor's Block(s) and Lot(s): 1703, Lot 1

City and County: San Francisco

Project Description: California Academy of Sciences improvements, addition of 56,200 gsf of new floor area; enclosure of about 23,800 gsf of existing public area; and renovation of about 49,585 gsf of existing area. The project would not result in new construction outside the footprint of the existing facility; no additional park property would be occupied.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance), and the following reasons, as documented in the Environmental Evaluation (Initial Study) for the project, which is attached.

Please see attached Initial Study.

Deadline for Filing of an Appeal of this Determination to the City Planning Commission: January 6, 1987.

An appeal requires: 1) a letter specifying the grounds for the appeal, and;
2) a $35.00 filing fee.

Barbara W. Sahm

Barbara W. Sahm, Environmental Review Officer

ASB: BWS: eh
8362A

ER5 4/84

INITIAL STUDY
CALIFORNIA ACADEMY OF SCIENCES (86.58E)

I. PROJECT DESCRIPTION

The proposed project is the implementation of a Master Plan by the California Academy of Sciences for its facilities in Golden Gate Park (see Figure 1, p. A-4).

The Master Plan would include construction of a three-story (plus basement) new west wing building which would replace the existing one-story building (Bird Hall); addition of two new stories to the existing one-story plus basement building (Science Hall); construction of a new linking hall over the loading area, linking the Life Through Time Exhibit with the Fish Roundabout; renovation of the ground floor and basement of Cowell Hall; enclosure of the entrance porch area at Cowell Hall; addition of bay windows (to house display exhibits) along the Life Through Time Exhibit corridor with aquarium support space below; renovation of the Blue Whale Courtyard (which would remain as an open air courtyard) and placement of a glass roof over the existing Central Courtyard to accommodate living natural history exhibits. The project is intended to provide space adequate to meet the public exhibit, visitor service and research collection requirements of the Academy into the 21st Century.

In total about 56,200 gsf would be newly constructed additional floor area; 23,800 gsf of existing public area would be enclosed and 49,585 gsf of existing area would be renovated or replaced (see Table 1, p. A-3). The project would not result in construction outside the footprint of the existing facility; no additional park property would be occupied. Figure 2, p. 4, shows the ground floor plan of the Academy as it would be after implementation of the project. The site is located in Golden Gate Park (Lot 1 in Assessor's Block 1703) along the easterly edge of the Music Concourse. The de Young and Asian Art Museums are located across the Music Concourse from the Academy. The total site area of the Academy is 201,200 sq. ft.

TABLE 1: PROJECT CHARACTERISTICS

	Area (gsf)
Additional Floor Area	
Science Hall – 2nd and 3rd Floors	19,000
New West Wing (Replacing Bird Hall) – 2nd and 3rd Floors and Basement	26,800
Linking Hall Connecting Life Through Time Exhibit and Fish Roundabout	3,000
Mechanical and Storage Area under Central Courtyard	5,000
Bay Windows for Life Through Time Exhibit with Aquarium Support Space Below	2,400
	56,200
Existing Public Areas to be Enclosed	
Glass Enclosure of Entrance Porch at Cowell Hall	3,000
Glass Roof over Central Courtyard	20,800
	23,800
Existing Areas to be Renovated / Replaced	
Cowell Hall – Basement and 1st Floor	22,870
Science Hall – 1st Floor	9,915
Blue Whale Courtyard	9,300
New West Wing (Replacing Bird Hall) – 1st Floor	7,500
	49,585

SOURCE: California Academy of Sciences; and Robinson Mills & Williams.

The overall project, including reassignment of existing space and addition of new area would result in a 28% increase in space devoted to public exhibition, education and support; a 34% increase in area used by visitors and members (such as cafeteria space, etc.), a 16% increase in space for research collection and collection support, and a 16% increase in administrative office space. Overall, the project would result in a 22% increase in the gross floor area of the Academy facility (see Table 2, p. A-6). The proportion of space assigned to each use would remain approximately the same.

Of the 80,000 gsf of newly enclosed and additional floor area, about 49% (39,100 gsf) would be for public exhibition, education space and support; about 26% (20,500 gsf) would be for visitor and member services; about 21% (17,000 gsf) would be for research collections and collection support; and about four percent (3,400 gsf) would be for administrative offices.

The project architect is Robinson, Mills and Williams, San Francisco.

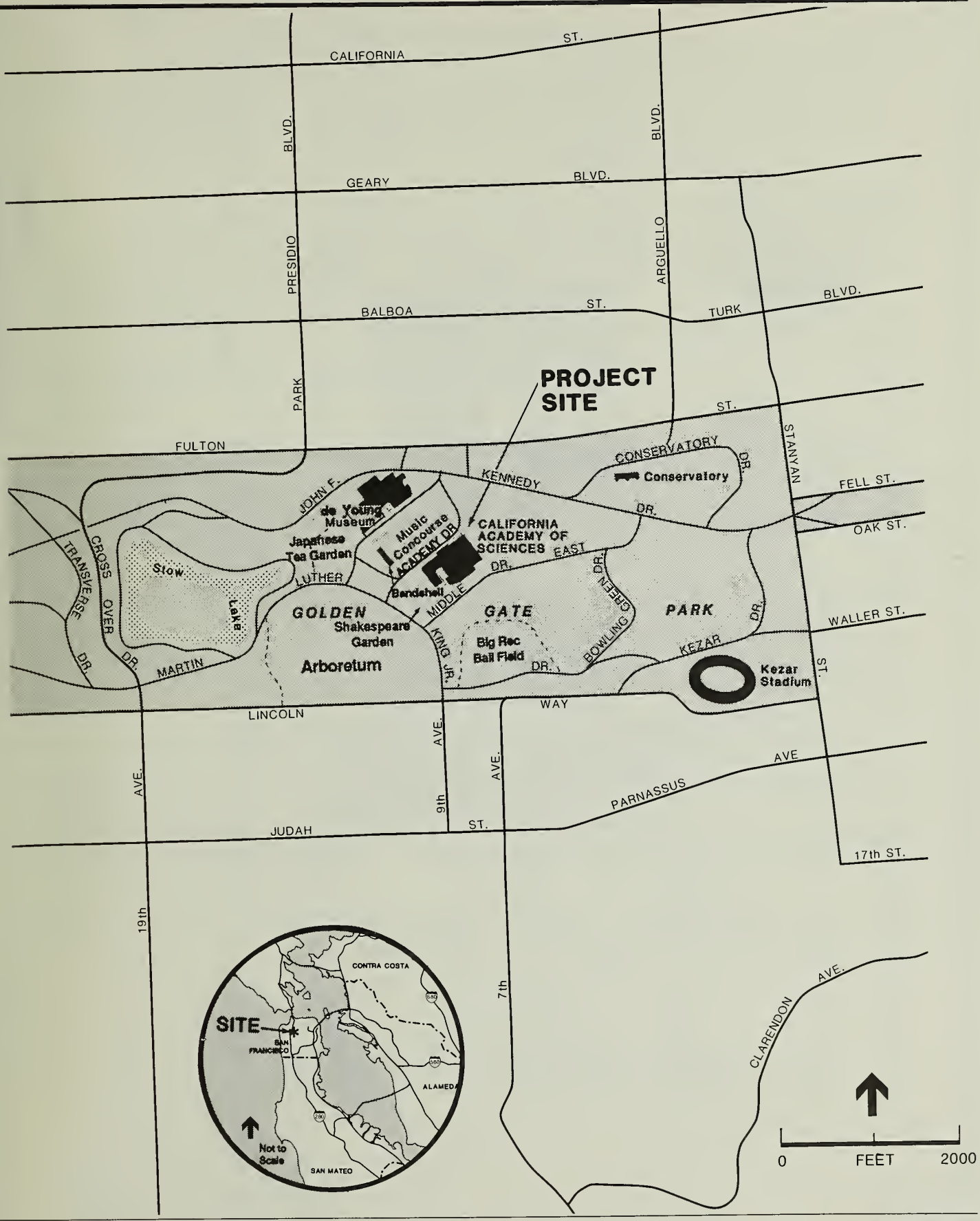
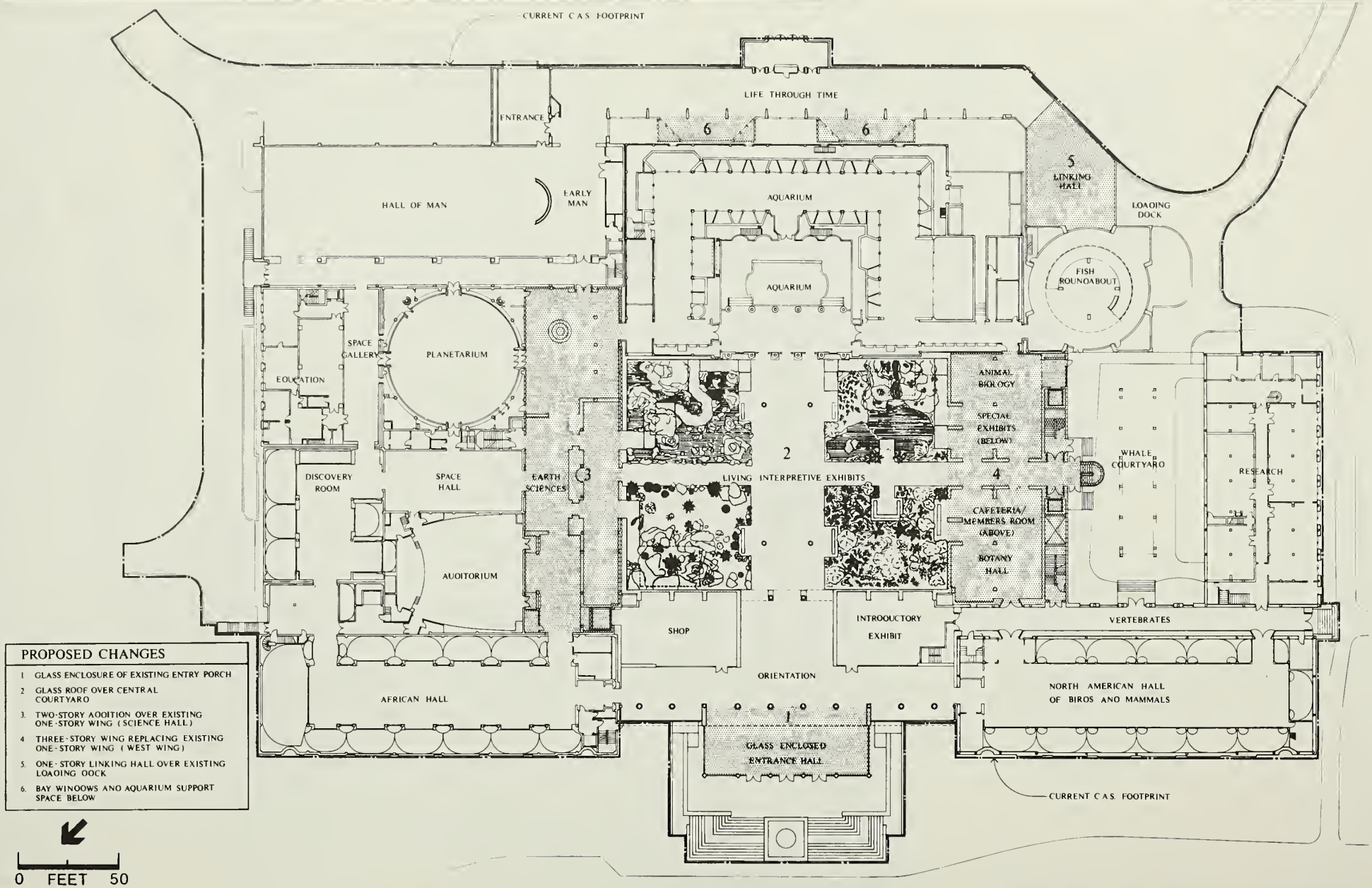


FIGURE 1
LOCATION MAP
CALIFORNIA ACADEMY OF SCIENCES

SOURCE: ESA



A-5

FIGURE 2
GROUND FLOOR PLAN
CALIFORNIA ACADEMY OF SCIENCES

SOURCE: ROBINSON MILLS & WILLIAMS

TABLE 2: MASTER PLAN PROGRAM

Program Uses	Existing/a/ Enclosed Area/GSF	New Program Areas: Existing Revised Area (GSF)/b/		New Program Areas: Existing Public Areas Enclosed & Additional Floor Area		Total Enclosed Area After Project Completion	Percentage Increase Over Existing Area
ACADEMY PROGRAM USES							
Public Exhibition, Education Space, and Support	152,156	155,856	+	39,100	=	194,956	28%
Visitor & Member Services	21,274	7,926	+	20,500	=	28,426	34%
Research Collections Collection Support	165,874	175,522	+	17,000	=	192,522	16%
GENERAL & ADMINISTRATIVE SUPPORT USES							
Admin. Offices	21,356	21,356	+	3,400	=	24,756	16%
TOTALS /c/	360,660	360,660	+	80,000	=	440,660	22%

/a/ All existing areas are derived from "Workshop Document, Institutional/Operational Planning and Building Programming, California Academy of Sciences, San Francisco, California," by E. Verner Johnson and Associates, dated November, 1982. Total area includes basement in North American Hall (13,335 gsf).
/b/ Includes reassignment of uses in existing enclosed space.
/c/ All totals are gross square feet. Mechanical and building services are pro-rated among the areas described above.

SOURCE: California Academy of Sciences; and Robinson, Mills & Williams.

II. SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS

A. EFFECTS FOUND TO BE POTENTIALLY SIGNIFICANT

The proposed project is examined in this Initial Study to identify potential effects on the environment. Some project-specific potential effects have been determined to be potentially significant, and will be analyzed in an environmental impact report (EIR). They include: the relationship of the project to the City Planning Code; visual quality and shadow impacts; and project-related and cumulative transportation.

B. EFFECTS FOUND NOT TO BE SIGNIFICANT

The following potential environmental impacts were determined either to be insignificant or have been mitigated to an insignificant level by measures included in the project. The following items require no further environmental analysis.

Land Use: The project would be an addition to an existing use. It would be compatible in use and scale with the surrounding park and facilities.

Light and Glare: No reflective glass would be used. The exterior of the new construction would be textured materials. These materials would not cause glare.

Population: The project would not displace people, housing or businesses. Approximately 22 new employees would be added to the existing Academy staff of about 200.

Noise: Construction activities within the Academy would result in a temporary increase in noise levels in and around the Academy facility. Project operation would not measurably increase existing noise levels in the project vicinity. Mitigation measures are proposed as part of the project, see p. A-24.

Air Quality: Construction air quality impacts would be mitigated to an insignificant level (mitigation measures are proposed as part of the project, see p. A-24). After project completion, impacts on air quality would not be measurable.

Public Services and Utilities: The increased demand for public services and utilities attributable to the project would not require additional personnel or equipment, and could be accommodated by existing services.

Biology: The project would not have a significant effect on plants or animals, displace any rare or endangered species, or result in the removal of any mature or scenic trees.

Geology/Topography: A detailed geotechnical report would be prepared for the project by a California-licensed engineer. The project sponsor and contractor would follow recommendations made in that report regarding building construction (see p. A-25).

Water: The project would not degrade or deplete ground water resources, or cause flooding, erosion or siltation. Drainage patterns would not be altered. Measures to mitigate potential impacts associated with excavation and dewatering would be included in the project (see p. A-25).

Energy/Natural Resources: The project would be designed and constructed to conform with the energy requirements of Title 24 of the California Administrative Code.

Cultural: The project would not conflict with preservation of any buildings of City landmark quality. There are no known archaeological or cultural remains in the project vicinity (see mitigation measure pp. A-25 and A-26).

Hazards: The project would not pose a hazard to people, animals or plant life. The Academy would review and update their evacuation and emergency response plan as necessary (see p. A-25).

A. COMPATIBILITY WITH EXISTING ZONING AND PLANS	N/A	DISCUSSED
1. Discuss any variances, special authorization, or changes proposed to the City Planning Code or Zoning Map, if applicable.	X	_____
*2. Discuss any conflicts with the Master Plan of the City and County of San Francisco, if applicable.	X	_____

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

*3.	Discuss any conflicts with any other adopted environmental plans and goals of the City or Region, if applicable.	X	____

The project would be compatible with existing zoning. The project is an expansion of existing uses on site. No new uses would be incorporated into the facility. The relationship of the proposed project to the policies of the Master Plan and provisions of the City Planning Code will be discussed in the EIR.

B. ENVIRONMENTAL EFFECTS		YES	NO	DISCUSSED
1.	Land Use. Could the project:			
*a.	Disrupt or divide the physical arrangement of an established community?	__	X	X
b.	Have any substantial impact upon the existing character of the vicinity?	__	X	X

The Academy buildings are situated in the interior of Golden Gate Park such that the project site is buffered from the mainly residential areas that surround the park. Those residential neighborhoods that abut the park closest to the Academy include the Inner Sunset, Richmond and the Greater Haight. The project site is in a Public (P) use district and an Open Space (OS) height and bulk district. The proposed project consists of changes to an existing facility, which is a permitted use in a P district. These issues will be discussed further in the EIR.

		YES	NO	DISCUSSED
2.	Visual Quality. Could the project:			
*a.	Have a substantial, demonstrable negative aesthetic effect?	__	X	X
b.	Substantially degrade or obstruct any scenic view or vista now observed from public areas?	__	X	X
c.	Generate obtrusive light or glare substantially impacting other properties?	__	X	X

The project's appearance and possible effects on views will be discussed in the EIR.

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* Derived from State EIR Guidelines, Appendix C, normally significant effect.

Mirrored glass would not be used in the project; the project would not generate any obtrusive light or glare. The project would not use mirrored, reflective or densely tinted glass (conforming to the City Planning Commission Resolution No. 9212). Light and glare will not be discussed further in the EIR.

3. Population. Could the project:	YES	NO	DISCUSSED
*a. Induce substantial growth or concentration of population?	__	X	X
*b. Displace a large number of people (involving either housing or employment)?	__	X	____
c. Create a substantial demand for additional housing in San Francisco, or substantially reduce the housing supply?	__	X	____

The project would create about 120 person-years of construction employment. The number of on-site construction workers would range from 25 to 85 at any one time. The Academy of Sciences currently employs 197 people at the project site; with the proposed changes, the Academy would add about 22 employees to its service staff, curatorial and scientific staff. This topic requires no further analysis and will not be discussed in the EIR.

4. Transportation / Circulation. Could the project:	YES	NO	DISCUSSED
*a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system?	__	X	X
b. Interfere with existing transportation systems, causing substantial alterations to circulation patterns or major traffic hazards?	__	X	X
c. Cause a substantial increase in transit demand which cannot be accommodated by existing or proposed transit capacity?	__	X	X
d. Cause a substantial increase in parking demand which cannot be accommodated by existing parking facilities?	__	X	X

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

The proposed project could cause circulation problems and increases in traffic, transit and parking demand. The EIR will discuss traffic increases and movements as they relate to the question of the street network in the vicinity of the project, in particular the street network within the Golden Gate Park.

Increased employment and visitor activity at the site could increase demand on existing transportation systems. The number of pedestrians in the area could also increase. The project would not alter existing circulation patterns except during construction; its effects on circulation during construction will be discussed in the EIR. Localized transportation impacts of the project will be discussed in the EIR.

The cumulative transportation effects, if any, of development within Golden Gate Park and the surrounding area will be analyzed in the EIR.

5. Noise. Could the project:	YES	NO	DISCUSSED
*a. Increase substantially the ambient noise levels for adjoining areas?	__	X	X
b. Violate Title 25 Noise Insulation Standards, if applicable?	__	X	____
c. Be substantially impacted by existing noise levels?	__	X	____

Total construction time would be about 26 months (all portions of the project would not be constructed simultaneously). Construction noise levels would fluctuate depending on construction phase, equipment type and duration of use, distance between noise source and listener, and presence or absence of barriers between noise source and listener. Project construction noise would mainly affect the Academy staff and the visitors to the facility, and possibly animals within the Academy. Construction noise would not affect any other group of people on a regular basis. The nearest buildings to the Academy are the de Young and Asian Art Museums about 500 ft. away.

Construction noise can reach up to 89 dBA/1,2,3/ at a distance of 50 ft. from the source with no intervening structures or trees to attenuate the sound. In the case of the

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* Derived from State EIR Guidelines, Appendix C, normally significant effect.

Academy, all construction would be in the interior of the Academy facility. Academy buildings would attenuate construction noise by 15 to 20 dBA. On the steps outside the Academy the noisiest construction phases (excavation and exterior finishing) could result in noise levels of about 75 dBA. In the Music Concourse, directly in front of the Academy, and in the Shakespeare Garden, immediately southwest of the Academy, noise levels could reach 70 dBA during the noisiest phases of construction. On the far side of the Music Concourse, infront of the de Young Museum, and infront of the Japanese Tea Garden, construction noise would not be audible over everyday background noise. The Academy has agreed that noisy construction activities would be suspended if there were a concert at the Music Concourse (see p. A-24).

Project operation would not result in perceptibly greater noise levels than those existing in the area. The amount of traffic generated by the project during any hour of the day, and cumulative traffic increases at the time of project completion, would cause traffic noise levels to increase by less than one dBA. To produce a noticeable increase in environmental noise, a doubling of existing traffic volume would be required; traffic increases of this magnitude would not occur with anticipated cumulative development including this project.

Mechanical equipment generating 70 dBA could dominate the noise environment within about 100 ft. of the source. (Fixed source noise levels are not regulated in P Use Districts, and therefore there is no maximum nighttime noise limit in the project area.) The project engineer and architect would include design features in the building to limit mechanical equipment noise levels to 70 dBA. (See mitigation measures p. A-24.)

Construction and operational noise require no further analysis and will not be included in the EIR.

NOTE - Noise

/1/ dBA is a measure of sound in units of decibels (dB). The "A" denotes the A-weighted scale, which simulates the response of the human ear to various frequencies of sound.

/2/ See Downtown Plan EIR (Vol. 1) Continuous Section IV.E. generally and Section IV.J., pp. IV.J.8-18. Increases of 1 dBA or less in environmental noise are not noticeable by most people outside a laboratory situation (National Academy of Science, Highway Research Board, Research Report No. 117 (1971)). (See also FHWA Highway Traffic Noise Prediction Model underlines, Report No. FHWA-RD-77-108, December 1978, p. 8,

regarding doubling of traffic volumes producing increases of 3 dBA or more, which are noticed by most people.)

/3/ Bolt, Beranek and Newman, December 31, 1971, Noise from Construction Equipment and Home Appliances, U.S. Environmental Protection Agency.

6. Air Quality / Climate. Could the project:	YES	NO	DISCUSSED
*a. Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation?	__	X	X
*b. Expose sensitive receptors to substantial pollutant concentrations?	__	X	X
c. Permeate its vicinity with objectionable odors?	__	X	____
d. Alter wind, moisture or temperature (including sun shading effects), so as to substantially affect public areas, or change the climate either in the community or the region?	__	X	X

Upon completion, the project would affect air quality in two ways. Emissions would be generated by project-related traffic, and by combustion of natural gas for building space and water heating. Transportation sources would account for most project-related emissions.

The proposed project would generate up to about 1,100 vehicle trip-ends per day. Air quality impacts on local intersections and freeway on-ramps would not be measurable. The Bay Area Air Quality Management District (BAAQMD) considers that development generating less than 2,000 vte per day would not have a measurable impact on air quality and therefore does not recommend an air quality analysis for such developments. Project-generated emissions would be less than the threshold established by the BAAQMD.

The regional impact of the project would be due to the increase in vehicle miles traveled (VMT) associated with the project. Based upon the estimate of project trip generation and an average trip length of about 25 miles, the daily regional increase of VMT is estimated at 27,500. Using composite emission factors supplied by the California Air Resources Board and assuming an average trip speed of 20 miles per hour (mph), total regional

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* Derived from State EIR Guidelines, Appendix C, normally significant effect.

TABLE 3: REGIONAL AUTOMOBILE EMISSIONS (in tons per day)/a/

Pollutant	2000 Project Emissions	2000 Total Regional Emissions	% Increase in 2000 Regional Emissions Due to Project
Carbon Monoxide	0.38	2,170	0.02
Hydrocarbons	0.04	560	0.007
Nitrogen Oxides	0.04	492	0.008

/a/ Based upon an increase of 27,500 vehicle miles traveled per day.

SOURCE: Environmental Science Associates, Inc.

emissions from project traffic have been estimated in Table 3, above. No measurable impact on regional air quality would be expected due to the quantities of pollutants which would be generated by the project in comparison with regional totals.

Potential shadowing impacts of the project on open space within Golden gate Park will be discussed in the EIR. The analysis will include shadow diagrams. The project would not be subject to Proposition K (the Park Shadow Ban Ordinance) as it would be constructed on property under the jurisdiction of the Recreation and Park Department, for Recreation and Park related purposes, and would thus be exempt (City Planning Code Section 295)./1/

NOTE - Shadow

/1/ A shadow analysis for the project is on file and available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister St., San Francisco.

7. Utilities / Public Services. Could the project:	YES	NO	DISCUSSED
*a. Breach published national, state or local standards relating to solid waste or litter control?	_	X	_____

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

*b.	Extend a sewer trunk line with capacity to serve new development?	__	X	____
c.	Substantially increase demand for schools, recreation or other public facilities?	__	X	X
d.	Require major expansion of power, water, or communications facilities?	__	X	X

The project would not increase the demand for schools, recreation or other public facilities since the Academy is an educational/recreational use. The proposed project would increase demand for and use of public services and utilities on the site, but not in excess of amounts expected and provided for in the project area. The providers of utilities and public services have been contacted and have responded that they have adequate capacity to serve the project and would not require additional personnel or equipment. Responses from these service providers are available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister St.

8. Biology. Could the project:		YES	NO	DISCUSSED
*a.	Substantially affect a rare or endangered species of animal or plant or the habitat of the species?	__	X	____
*b.	Substantially diminish habitat for fish, wildlife or plants, or interfere substantially with the movement of any resident or migratory fish or wildlife species?	__	X	X
c.	Require removal of substantial numbers of mature, scenic trees?	__	X	____

Because the proposed addition to the Academy would occur within the existing footprint of the facility, no wildlife or plant habitats would be substantially affected by the project. This topic will not be discussed in the EIR.

9. Geology / Topography. Could the project:		YES	NO	DISCUSSED
*a.	Expose people or structures to major geologic hazards (slides, subsidence, erosion and liquefaction)?	__	X	X

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* Derived from State EIR Guidelines, Appendix C, normally significant effect.

b. Change substantially the topography or any unique geologic or physical features of the site?	__	X	X

The project site is between 230 ft. to 250 ft., San Francisco City Datum (SFD)./1/ Soils at the site are composed of two to six feet of manmade fill deposits which are supported by an extensive sand dune deposit varying from medium dense to very dense with depth./2/ Groundwater levels are expected to be below 220 ft. SFD./3/. The foundation would have spread footings. The new basement beneath Bird Hall would be about 12 ft. below ground level; dewatering is not expected to be required.

The closest active faults to San Francisco are the San Andreas Fault, about nine miles southwest of Downtown, and the Hayward and Calaveras Faults, about 15 and 30 miles east of Downtown, respectively. The project area would experience very strong (Intensity Level C, masonry badly cracked with occasional collapse, frame buildings lurch when on weak underpinning with occasional collapse) groundshaking during a major earthquake./4/ Parts of the project would replace buildings on the site built prior to current seismic code standards and therefore generally more susceptible to earthquake damage. The site is not within an area of liquefaction or subsidence. It is not within an area of potential tsunami or seiche flooding./5/

The project sponsor would follow the recommendations of structural and foundation reports to be prepared for any excavation and construction on the site. The building must meet current seismic engineering standards of the San Francisco Building Code which include earthquake-resistant design and materials. The Code is designed to allow for some structural damage to buildings but not collapse during a major earthquake. The Academy already has an emergency response plan; this plan would be reviewed and updated as necessary (see mitigation measure, p. A-25).

This topic requires no further analysis in the EIR.

NOTES - Geology, Hydrology, Seismology

/1/ San Francisco City Datum establishes the City's "0" point for surveying purposes at approximately 8.6 feet above mean sea level.

/2/ Dames and Moore, Foundation Investigations, Proposed Additions, California Academy of Sciences, June 13, 1973.

/3/ Ibid.

/4/ URS/John A. Blume and Associates, San Francisco Seismic Safety Investigation, 1974. Groundshaking intensities that would result from a major earthquake were projected and classified on a five-point scale ranging from E (weak) through A (very violent).

/5/ Ibid.

10. Water. Could the project:	YES	NO	DISCUSSED
*a. Substantially degrade water quality, or contaminate a public water supply?	__	X	____
*b. Substantially degrade or deplete ground water resources, or interfere substantially with ground water recharge?	__	X	X
*c. Cause substantial flooding, erosion or siltation?	__	X	____

The project would not affect drainage patterns or water quality because the site is now entirely covered with impermeable surfaces. Dewatering of the site is not expected to be necessary. No further analysis of this topic is required in the EIR.

11. Energy / Natural Resources. Could the project:	YES	NO	DISCUSSED
*a. Encourage activities which result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner?	__	X	X
b. Have a substantial effect on the potential use, extraction, or depletion of a natural resource?	__	X	____

Annual energy consumption by existing uses on the site, museum/exhibition and office is 3.56 million kWh of electricity and 180,000 therms of natural gas, equal to about 54.4 billion Btu at the source./1,2/

Removal of existing structures would require an unknown amount of energy. Fabrication and transportation of building construction would require about 100 billion Btu of gasoline, diesel fuel, natural gas, and electricity./3/ Distributed over the estimated 50-year life of the project, this would be about 2.0 billion Btu per year, or about 20% of annual building energy requirements.

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* Derived from State EIR Guidelines, Appendix C, normally significant effect.

New buildings in San Francisco are required to conform to energy conservation standards specified by Title 24 of the California Administrative Code. Documentation showing compliance with these standards is submitted with the application for the building permit and is enforced by the Bureau of Building Inspection.

Table 4, below, shows the estimated operational energy which would be used by the project. Project demand for electricity during PG&E's peak electrical load periods, July and August afternoons, would be about 370 kW, an estimated 0.002% of the PG&E's peak

TABLE 4: ESTIMATED PROJECT ENERGY USE/a/

Daily Natural Gas Consumption/b/	
Estimated natural gas consumption per sq. ft.	55 Btu/c/
Estimated peak daily natural gas consumption	1,220 Therms
Monthly Electric Consumption/b/	
Estimated electrical consumption per sq. ft.	1.16 kWh (11,900 Btu/d/
Estimated total electrical consumption	73,174 kWh (750 million Btu)
Annual Consumption	
Estimated total annual natural gas consumption	12,600 Therms
Estimated total annual electrical consumption	878,100 kWh (9.0 billion Btu)
Connected kilowatt load	399 Kilowatts
Estimated total annual energy consumption	10.25 billion Btu (1,830 barrels of oil)

/a/ Energy use includes space conditioning, service water heating and lighting in accordance with allowable limits under Title 24. Estimated electricity includes an additional 3 kWh/sq.ft./yr., consumed by appliances such as tyepwriters, computers, coffee makers, etc. than assumed by Title 24 estimates.
/b/ These calculations are available for review at the Office of Environmental Review, 450 McAllister Street, San Francisco, California.
/c/ Btu (British thermal unit): A standard unit for measuring heat. Technically, it is the quantity of heat required to raise the temperature of one pound of water 1 degree Fahrenheit (251.97 calories) at sea level.
/d/ Energy Conversion Factors:

one gallon gasoline	=	125,000 Btu
one kilowatt (kw)	=	10,239 Btu
one therm	=	100,000 Btu
one barrel oil	=	5,600,000 Btu

SOURCE: Flack & Kurtz Consulting Engineers

load of 16,000 MW./4/ Project demand for natural gas during PG&E's peak natural gas load periods, January mornings, would be 25 cu.ft. per day, or about 0.0007% of PG&E's peak load of about 3.3 million cu. ft. per day./4/ Annual and peak daily electricity and natural gas consumption are shown in Figures 3 and 4, pp. A-20 and A-21.

San Francisco's electricity requirements are expected to be about five billion kWh per year by 2000, an increase of about 32% from 1984. Natural gas consumption is expected to be 35 billion cu. ft. annually by 2000, the same as in 1984./5/

Increased San Francisco energy demands to the year 2000 would be met by PG&E from nuclear sources, oil and gas facilities, hydroelectric and geothermal facilities, and other sources such as cogeneration, wind and imports. PG&E plans to continue receiving most of its natural gas from Canada and Texas under long-term contracts. Energy will not be discussed further in the EIR.

NOTES - Energy

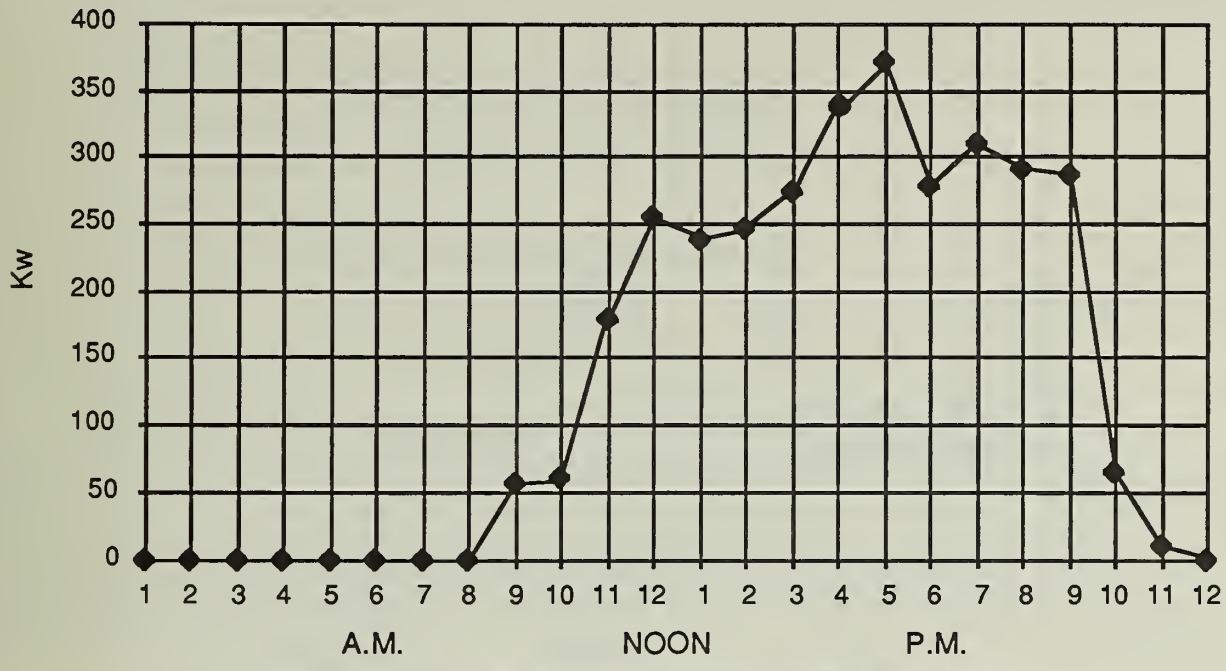
/1/ Existing energy use is based on PG&E customer billings for 1983; at-source thermal energy, given in British thermal units (Btu), is based on information received from PG&E, Technical Service Department, May 10, 1984.

/2/ The British thermal unit (Btu) is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at sea level. The term "at-source" means that adjustments have been made in the calculation of the thermal energy equivalent (Btu) for losses in energy that occur during generation, transmission, and distribution of the various energy forms as specified in: ERCDC, 1977, Energy Conservation Design Manual for New Non-Residential Building, Energy Conservation and Development Commission, Sacramento, California, and Apostolos, J.A., W.R., Shoemaker, and E.C. Shirley, 1978 Energy and Transportation System, California Department of Transportation, Sacramento, California, Project #20-7, Task 8. All references to Btu in this report are at-source values.

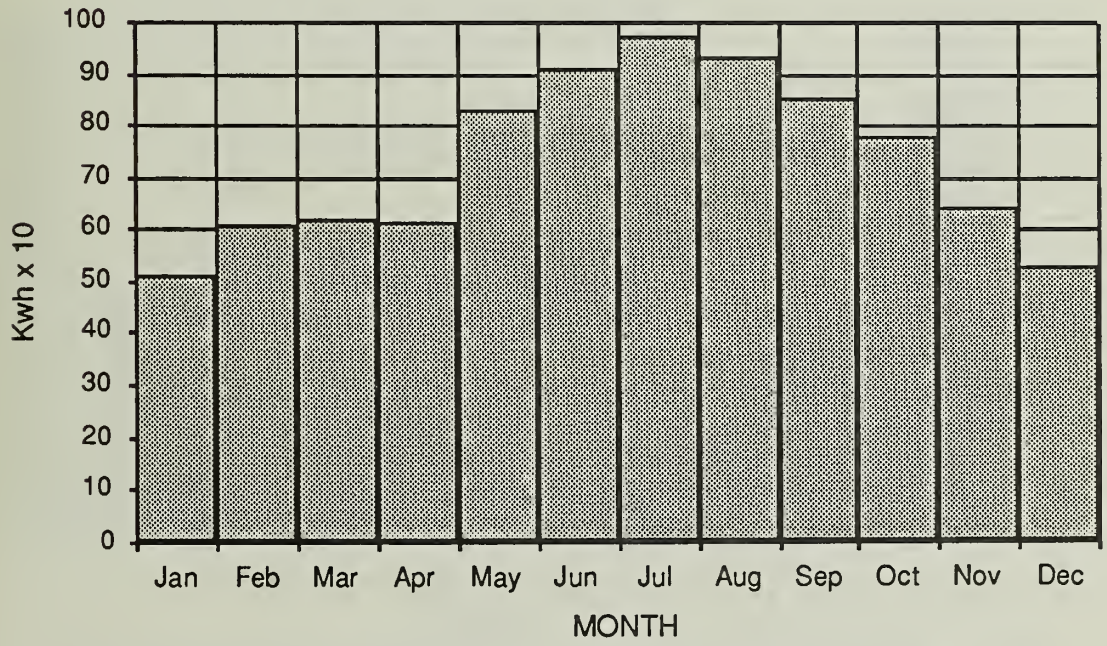
/3/ Hannon, B., et al., 1978, "Energy and Labor in the Construction Sector," Science 202:837-847.

/4/ San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984, Vol. 1 pp. IV.G.3-4. (Note: one cu. ft. = 1,100 Btu)

/5/ Ibid; p. IV.G.12.



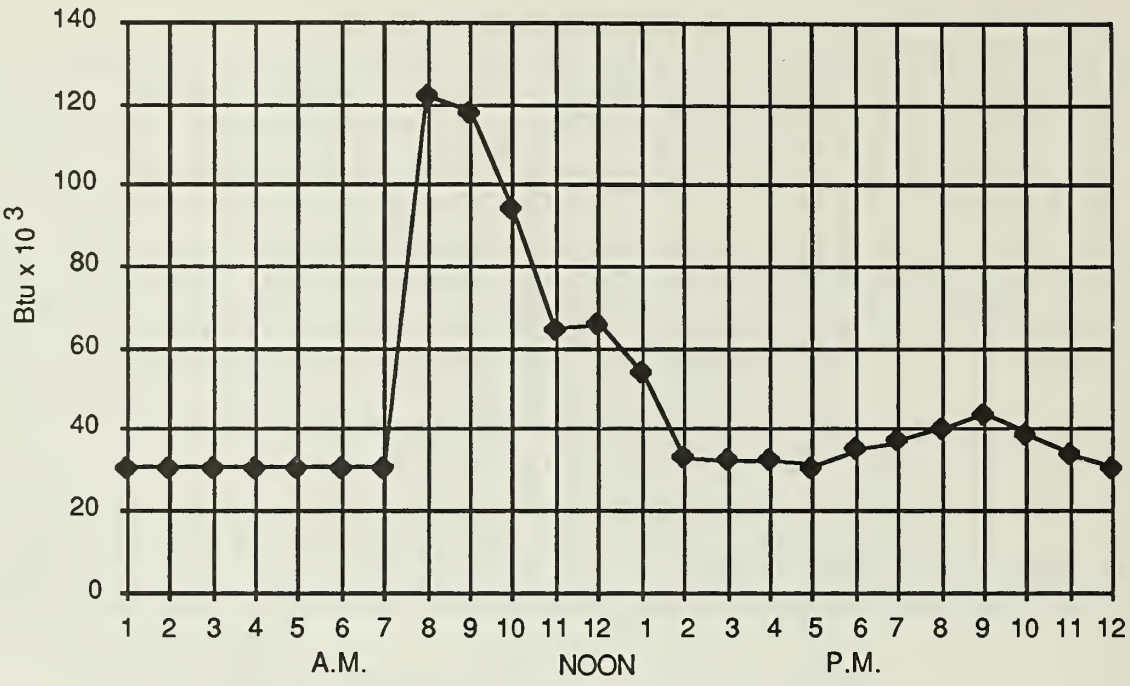
PEAK DAY ELECTRICAL DEMAND BY HOUR



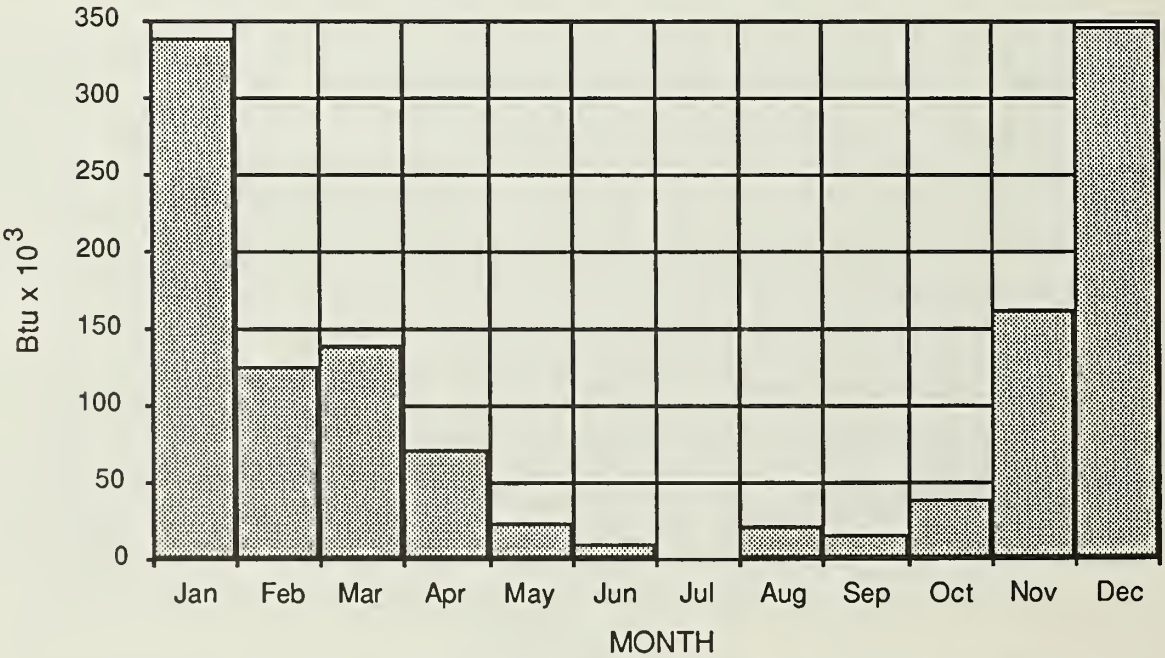
ANNUAL CONSUMPTION OF ELECTRICITY BY MONTH

FIGURE 3
ELECTRICITY–PEAK DAY DEMAND AND ANNUAL CONSUMPTION

SOURCE: FLACK & KURTZ CONSULTING ENGINEERS



PEAK DAY NATURAL GAS DEMAND BY HOUR



ANNUAL CONSUMPTION OF NATURAL GAS BY MONTH

FIGURE 4
NATURAL GAS PEAK DAY AND ANNUAL GAS LOAD DISTRIBUTION

SOURCE: FLACK & KURTZ CONSULTING ENGINEERS

12. Hazards. Could the project:	YES	NO	DISCUSSED
*a. Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected?	__	X	____
*b. Interfere with emergency response plans or emergency evacuation plans?	__	X	X
c. Create a potentially substantial fire hazard?	__	X	____

The proposed project could result in a greater number of people on the site, which could increase the difficulty of evacuating people from the site if an emergency evacuation were required. The existing Academy evacuation and emergency response plan would be reviewed and updated as necessary (see mitigation measure, p. A-25). Thus, this topic will not be discussed in the EIR.

13. Cultural. Could the project:	YES	NO	DISCUSSED
*a. Disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except as a part of a scientific study?	__	X	X
*b. Conflict with established recreational, educational, religious or scientific uses of the area?	__	X	X
c. Conflict with preservation of any buildings subject to the provisions of Article 10 or Article 11 of the City Planning Code?	__	X	X

An Act to provide for the improvement of public parks in the City of San Francisco was approved on April 4, 1870; thus Golden Gate Park was begun. The Academy of Sciences was founded in 1853. On November 15, 1910, a charter amendment was passed, allowing construction of the first Academy facility in Golden Gate Park. The existing Bird Hall was constructed in 1916; Steinhart Aquarium opened in 1923, African Hall in 1934, and Morrison Planetarium in 1952. The California Academy of Sciences is listed in the California Inventory of Historic Places./1/

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* Derived from State EIR Guidelines, Appendix C, normally significant effect.

There is no evidence of archaeological or cultural remains in the project area. Prior to the creation and initial development of Golden Gate Park, this area of San Francisco was primarily sand dunes. Such environments were not extensively used by prehistoric people; there is low possibility of prehistoric cultural remains./1/

The proposed additions to the Academy are intended to improve the existing facility by increasing space for exhibits, visitor services, and research collections and support and improve the educational and recreational opportunities available to the community. The project would not conflict with the preservation of any buildings subject to the provisions of Article 10 of the Planning Code because the structure to be demolished is not a designated City landmark.

The project would involve new excavation to a depth of about 12 ft. beneath the new West Wing (Bird Hall); there is currently no basement beneath Bird Hall. There are basements of similar depth to the proposed basement, beneath both Cowell Hall and Science Hall. The project includes measures to mitigate potential impacts on any cultural resources (see pp. A-25 and A-26).

NOTE - Cultural

/1/ Christian Gerike, Assistant Coordinator and Brian F. Terhorst, Researcher I, California Archaeological Inventory, Northwest Information Center, Department of Anthropology, Sonoma State University, letter, dated June 13, 1986.

C. OTHER	YES	NO	DISCUSSED
Require approval of permits from City Departments other than Department of City Planning or Bureau of Building Inspection, or from Regional, State or Federal Agencies?	_	X	_____

The project would require approval from the Recreation and Park Commission, the Art Commission and the Board of Supervisors.

D. MITIGATION MEASURES	YES	NO	N/A	DISCUSSED
1. If any significant effects have been identified, are there ways to mitigate them?	_	_	X	X
2. Are all mitigation measures identified above included in the project?	X	_	X	X

The following mitigation measures are proposed as part of the project.

Construction Noise

- The construction contract would require that the project contractor muffle and shield intakes and exhausts, shroud or shield impact tools, and use electric-powered rather than diesel-powered construction equipment, as feasible, so that noise would not exceed limits stated in the City's Noise Ordinance (Article 29, San Francisco Administrative Code, 1972).

- The project sponsor would require the general contractor to construct barriers around the site, and around stationary equipment such as compressors, which would reduce construction noise by as much as five dBA, and to locate stationary equipment in pit areas or excavated areas, as these areas would serve as noise barriers.

- Construction activity which would generate a noise level in excess of 70 dBA, on the steps outside the Academy, would be suspended during any concerts in the Music Concourse.

Construction Air Quality

- The project sponsor would require the general contractor to sprinkle demolition sites with water continually during demolition activity; sprinkle unpaved construction areas with water at least twice per day to reduce dust generation by about 50%; cover stockpiles of soil, sand, and other such material; cover trucks hauling debris, soil, sand, or other such material; and sweep streets surrounding demolition and construction sites at least once per day to reduce TSP emissions. The project sponsor would require the general contractor to maintain and operate construction equipment so as to minimize exhaust emissions of TSP and other pollutants, by such means as a prohibition on idling motors when equipment is not in use or when trucks are waiting in queues, and implementation of specific maintenance programs (to reduce emissions) for equipment that would be in frequent use for much of a construction period.

Geology/Topography

- A detailed foundation and structural design study would be conducted for the proposed changes by a California-licensed structural engineer and a geotechnical consultant. The project sponsor would follow the recommendations of these studies during the final design and construction of the project.

Energy

- The newly enclosed Central Courtyard would maintain a constant temperature by using a constant volume system with economizer. Heating and cooling would be supplied to the lower ten feet of space only. Above a height of ten feet, the air would be allowed to stratify. Exhaust fans would release hot air at the top of the atrium. In warm weather, outside air would be used for ventilation and cooling. In cold weather, hot air would be recirculated.

Hazards

- The Academy would review and update its evacuation and emergency response plan as necessary. The plan would be reviewed by the Mayor's Office of Emergency Services.

Cultural

- Should evidence of cultural or historic artifacts of significance be found during project excavation, the Environmental Review Officer (ERO) and the President of the Landmarks Preservation Advisory Board would be notified immediately, and any excavation which could damage such artifacts halted. The project sponsor would select an archaeologist or other expert to help the Office of Environmental Review determine the significance of the find and whether feasible measures, including appropriate security measures, could be implemented to preserve or recover such artifacts. The ERO would then recommend specific mitigation measures, if necessary.

Copies of reports prepared according to this mitigation measure would be sent to the California Archaeological Site Survey Office at Sonoma State University. Excavation or construction that might damage the discovered cultural resources would be suspended for a maximum of four weeks (cumulatively for all instances that the ERO has required a delay in excavation or construction) to permit inspection, recommendation and retrieval, if appropriate.

E. ALTERNATIVES

A. No Project: The Academy would remain in its existing condition.

B. Smaller Project: Addition of approximately one-half the area proposed in the project.

C. Larger Project: Addition of more exhibit space than is proposed in the project.

D. Moving Academy entirely out of Golden Gate Park, to a new facility.

E. Removal of research and administrative uses from Golden Gate Park and renovating space currently used for these uses for exhibit space.

These alternatives and their potential impacts will be discussed in the EIR.

F. MANDATORY FINDINGS OF SIGNIFICANCE	YES	NO	DISCUSSED
*1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or pre-history?	_	X	_____

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

*2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	_	X	_____
*3. Does the project have possible environmental effects which are individually limited, but cumulatively considerable? (Analyze in the light of past projects, other current projects, and probable future projects.)	_	X	_____
*4. Would the project cause substantial adverse effects on human beings, either directly or indirectly?	_	X	_____
*5. Is there a serious public controversy concerning the possible environmental effect of the project?	_	X	_____

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

G. ON THE BASIS OF THIS INITIAL STUDY:

___ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Department of City Planning.

___ I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because the mitigation measures, numbers __ in the discussion, have been included as part of the proposed project. A NEGATIVE DECLARATION will be prepared.

_X_ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Barbara W. Sahm

Barbara W. Sahm
Environmental Review Officer

for

Dean L. Macris
Director of Planning

Date: 12/22/76

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Mary Burns
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Ms. Deborah Learner
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Stanyan-Fulton Neighborhood Assoc.

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Haight-Ashbury-Neighborhood Assoc.

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APPENDIX B: TRANSPORTATION

TABLE B-1: INTERSECTION LEVELS OF SERVICE DESCRIPTIONS/a/

Level of Service	Description	Volume/Capacity (v/c) Ratio/b/
A	Level of Service A describes a condition where the approach to an intersection appears quite open and turning movements are made easily. Little or no delay is experienced. No vehicles wait longer than one red traffic signal indication. The traffic operation can generally be described as excellent.	less than 0.60
B	Level of Service B describes a condition where the approach to an intersection is occasionally fully utilized and some delays may be encountered. Many drivers begin to feel somewhat restricted within groups of vehicles. The traffic operation can generally be described as very good.	0.61-0.70
C	Level of Service C describes a condition where the approach to an intersection is often fully utilized and back-ups may occur behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. The driver occasionally may have to wait more than one red traffic signal indication. The traffic operation can generally be described as good.	0.71-0.80
D	Level of Service D describes a condition of increasing restriction causing substantial delays and queues of vehicles on approaches to the intersection during short times within the peak period. However, there are enough signal cycles with lower demand such that queues are periodically cleared, thus preventing excessive back-ups. The traffic operation can generally be described as fair.	0.81-0.90
E	Capacity occurs at Level of Service E. It represents the most vehicles that any particular intersection can accommodate. At capacity there may be long queues of vehicles waiting upstream of the intersection and vehicles may be delayed up to several signal cycles. The traffic operation can generally be described as poor.	0.91-1.00
F	Level of Service F represents a jammed condition. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration. Hence, volumes of vehicles passing through the intersection vary from signal cycle to signal cycle. Because of the jammed condition, this volume would be less than capacity.	1.01+

/a/ V/C Ratios apply to signalized intersections only.
/b/ Capacity is defined as Level of Service E.

SOURCE: Highway Capacity Manual, Highway Research Board, 1965 and Environmental Science Associates, Inc.

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